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# THE Montreal Medical Journal

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## INDEX TO VOL. XXX.

- A**BBOTT, Dr. Maude E., museum notes, congenital malformation of the heart, 522
- Abortion, missed, 849
- Abscess of the lung, 230  
three cases of, treated, 329
- Adami, Dr. J. George, address at the tuberculosis conference of Canada, 175  
on theories of inheritance, with special reference to the inheritance of acquired conditions in man, 425
- Address at the opening of the tuberculosis conference of Canada, 169
- Address at the tuberculosis conference of Canada, 169, 171, 173, 175, 182
- Address in medicine, Canadian medical association, 664
- Address in medicine, Maritime medical association, 1901, 457
- Address in Surgery, Canadian medical association, 676
- Address, presidential, before the American dermatological association at the meeting in Chicago, June, 1901, 417
- Address, presidential, before the Maritime medical association, 609
- Address, President's, Canadian medical association, 1901, 657
- Address to graduates in medicine, annual convocation of McGill university, 1901, 515
- Adeno-carcinoma of the rectum, 817
- Alcohol as a therapeutic agent, 458
- Anæsthesia, cocaine, 134  
spinal, 709
- Anatomy, how to teach, 78
- Anderson, Dr. Duncan P., peculiar case of bladder reflex, 934
- Angiotribe versus ligature, 36
- Annual convocation of the medical faculty of McGill university, 474
- Anterior poliomyelitis, report of a case of tendon grafting for paralysis following, 352
- Appendicitis, acute, complicating hernia in a very young infant, 201  
acute, exclusively rectal feeding in, 853
- Appendix vermiformis, the, 854
- Arsenical neuritis in England, the epidemic of, 132
- Astigmatism, corneal, operative treatment of, 780
- Auscultation, the early history of, 241
- B**ELL, Dr. James, case reports, with specimens, 95.  
three cases of abscess of the lung treated, 329
- Biliary cirrhosis, obstructive, 372
- Blackader, Dr. A. D., A discussion of the relation between human and bovine tuberculosis, with special reference to primary infection in children through the alimentary tract, 905  
on the acute dilatation of the heart met with during childhood and adolescence, 533
- Bladder reflex, peculiar case of, 934  
tumour of the, 470
- Blastomycetic dermatitis, 226
- Bothriocephalus latus, a specimen of, 350
- Bracken, Dr. H. M., the present epidemic of small-pox in America, 825
- Brain, wounds of the venous sinuses of the, 788
- Bromides in the treatment of epilepsy, 368
- Brown, Dr. Ernest R., An unusual tumour of the soft palate, 937
- Brown, Dr. George A., vesical hæmorrhage during labour, 10
- Brown, Dr. Lawrason, sputum examination in pulmonary tuberculosis and its prognostic value, 769
- Buller, Dr. Frank, syphilis as seen by the ophthalmic surgeon, 699  
the medical student and his prospective career, 69
- Byers Mr. J. R., Neuritis, 973
- C**ACODYLATE of iron, on, 361
- Campbell, Dr. G. Gordon, a cardiac case for diagnosis, 20, 841  
an undiagnosed heart lesion: sclerotic endocarditis, 841  
case reports, 624
- Camphor as a stimulant in typhoid fever, the value of, 368
- Canadian medical association, 480  
proceedings, 715
- Canadian medical literature, 112, 793
- Cancer of the female genitals, 633
- Carcinoma genital, 955  
hysterectomy for, 290  
mammary, statistics of, 853  
of the female genitalia, 288  
of the stomach, 471, 816  
recto-vaginal, 36
- Cardiac case for diagnosis, A, 20  
conditions, supra-renal extract in, 845
- Cerebral complications of whooping cough, on some of the, 131
- Charlton, Dr. G. A., on the frequency and distribution of goitre in the island of Montreal, 596
- Childbed mortality, 40



- Chorion, myxomatous degeneration of the, 923
- Chown, Dr. H. H., president's address, Canadian medical association, 1901, 657
- Chronic malignant endocarditis, with presystolic murmur due to vegetations on the mitral valve, 333
- Cirrhosis of the liver, 370, 372
- Cocaine anæsthesia, 134
- analgesia by lumbar puncture, 894
- Cocainization of the spinal cord, 64
- Colby, Mr. J. C., the etiology and treatment of empyema, 734
- College of physicians and surgeons of the province of Quebec, the judgment against, 564
- Colon, resection of the, 95
- Colour perception in the child, development of, 293
- Congenital malformation of the heart, 522
- stenosis of the larynx, 705
- Contracted pelvis, the indications for operative procedure in, 41
- Corneal erosions, 791
- ulcers, iodine for, 293
- Correspondence, Caledonia springs as a medical appointment, 163
- matters of paramount importance to the profession—the college of physicians and the Pineault and Roy laws, 558
- Cottage hospital fund, the Lady Minto, 393
- Craig, Dr. Robert H., sarcoma of the nasal septum, 455
- Cretinism, sporadic, in Canada, 604
- Croupous pneumonia, on the treatment of, 960
- D**EEKS, Dr. W. E., suprarenal extract in cardiac conditions, 845
- Dermatitis herpetiformis, 768
- Development, the mechanics of, a short review of Driesch's work on, 342
- Diabetes mellitus, on the treatment of, 957
- Diaphragm, injuries to, by puncture, 787
- Diarrhoeas in infancy, on the treatment of, 546
- Dilatation of the heart, acute, met with during childhood and adolescence, 533.
- Dislocation of the shoulder, old, 469
- Driesch's work on the mechanics of development, a short review of, 342
- E**ARL of Minto, His Excellency the Governor-General, address at the opening of the tuberculosis conference of Canada, 169
- Eclampsia, puerperal, 857
- the rôle of the liver in, 42
- Ectopic gestation, a cause of error in the diagnosis of, 44
- gestation with subsequent normal pregnancy, 269
- pregnancy, diagnosis of, 37
- Editorials, 65, 137, 236, 304, 382, 393, 474, 564, 566, 636, 638, 731, 821, 886, 889
- Elbow, excision of the following traumatism, 267
- Elder, Dr. J. M., acute appendicitis complicating hernia in a very young infant, 201
- notes on the use of tuberculin as an aid to surgical diagnosis, 759
- Electricity, treatment of phthisis by, 950
- Empyema, the etiology and treatment of, 734
- Empyema, general, complicating measles, 8
- Endocarditis, chronic malignant, with presystolic murmur due to vegetations on the mitral valve, 333
- sclerotic, an undiagnosed heart lesion, 841
- England, Dr. Frank R., missed abortion, 849
- Enteric fever in a military hospital, 951
- Enteroptosis, 287
- Epiglottitis, papilloma of the, 705
- Epilepsy, bromides in the treatment of, 368
- Evans, Dr. D. J., ectopic gestation with subsequent normal pregnancy, 269
- general emphysema complicating measles, 8
- Excision of one-half of the tongue, 468
- of the elbow following traumatism, 267
- of the ulna, myeloid sarcoma, 267
- F**IBROID uterus and shrunken condition of the omentum, 233
- tumours complicating pregnancy, 858
- Finley, Dr. F. G., chronic malignant endocarditis with presystolic murmur due to vegetations on the mitral valve, 333
- neuritis from gun-shot injury, 199
- notes on an epidemic of mild small-pox, 249
- the early history of auscultation, 241
- Foley, Dr. J. Leslie, dermatitis herpetiformis, 768
- Foot, fungating growth of the, 384
- Forbes, Dr. A. Mackenzie, a case of congenital absence of the uterus, 848
- a case of metastatic streptococcal infection, 620
- lecture on syphilis delivered to the students of the dental college of the province of Quebec, 277
- report of a case of tendon grafting for paralysis following anterior poliomyelitis, 352



Foreign body, intestinal obstruction by a, 933  
 Formaline as a disinfectant, on the value of, 363  
 Fracture of the arm, multiple, 469  
     of the humerus, ununited, 470  
     of the pelvis, 14  
 Fry, Dr. F. Morley, a case of spinal tumour, 4  
 Fungating growth of the foot, 384

## GALL-STONES, 302

Gardner, Dr. William, address to graduates in medicine, 515  
     myxomatous degeneration of the chorion, 928  
 Gastric diseases, surgery of, 640  
     ulcer, repair and perforation, 50  
 Genital carcinoma, 955  
 Genital tuberculosis, 956  
 Gillies, Dr. D. B., a report of the cases of typhoid fever admitted into the Royal Victoria Hospital during 1900, 99  
     notes on the action of heroin as compared with that of the other derivatives of opium, 450  
 Glycerine as a medium for antiseptics, the value of, 363  
 Gonorrhœa, general infection in, 952  
 Grant, Sir James, address at the tuberculosis conference of Canada, 171  
 Grey, Dr. Clarence, impressions of teaching in the Edinburgh Royal Infirmary, 354  
 Goitre in the island of Montreal, on the significance and distribution of, 596  
 Gun-shot injury, neuritis from, 191

**HÆMOGLOBIN** in syphilis (Justus), the diagnostic value of, 843  
 Hæmorrhagic diathesis, the, in typhoid fever, 51  
 Hakine's prophylactic, studies upon the plague bacillus with special reference to, 257  
 Hamilton, Dr. W. F., a specimen of bothriocephalus latus, 350  
     pyloric stenosis with hypertrophy, 754  
 Health department, the administration of the civic, 920  
 Heart lesion, an undiagnosed, sclerotic endocarditis, 841  
     on the acute dilatation of the, met with during childhood and adolescence, 533  
 Hegar's sign, value of, 859  
 Hernia in a very young infant, acute appendicitis complicating, 201  
     omental with abscess in the sac, 233  
     strangulated, resection of the bowel in, 856  
     traumatic ventral, 763  
 Heroin, notes on the action of, as compared with that of the other derivatives of opium, 450

Higgins, Dr. Chas. H., studies upon the plague bacillus with special reference to Haffkine's prophylactic 257  
 High-school methods, 304  
 Hope, Mr. J. T., traumatic synovitis, 647  
 Hospital appointments for women, 393  
 Howard, Mr. A. C. P., malaria, its etiology, recognition and treatment, 403  
 How to teach anatomy, 78  
 Hutchison, Dr. J. Alex., case reports, 267  
     fracture of the pelvis, 14  
     traumatic ventral hernia, 763  
 Hydrocele and varicocele, treatment of, 855  
 Hyperacidity, 630  
 Hysterectomy for carcinoma, 290  
 Hypnotism, 979  
 Hysteria, ocular, 294

**I**LEOCOLIC intussusception, a fatal case of, 765  
 Impressions of teaching in the Edinburgh Royal Infirmary, 354  
 Incontinence of urine, nocturnal, 290  
 Indentations in the skulls of the new born, 299  
 Infectious diseases, prophylaxis of, by serumtherapy, 81  
     pneumonia, 694  
 Inheritance, on theories of, with special reference to the inheritance of acquired conditions in man, 425  
 Injury and death of the late president of the United States, 821  
 Insane, pevic disease among the, 632  
 Insanity in women from a gynaecological and obstetrical point of view, 386  
 Insomnia, on the cause and cure of, 365  
 Inter-polar currents, some general principles of with special reference to those of the static machine, 938  
 Intestinal obstruction by a foreign body, 933  
 Intussusception, a fatal case of ileocolic, 765  
     in an infant, 232

## JABORANDI and its alkaloids, 364

Jaundice, operative treatment of obstructive, 463  
 Jones, Dr. J. R., address in medicine, Canadian medical association, 664  
 Jones, Dr. O. M., the address in surgery, Canadian medical association, 676

## KOCH and tuberculosis, 636

Kinghorn, Dr. H. M., symptoms of renal tuberculosis, 191

- L**ABERGE, Dr. J. E., the administration of the civic health department, 920
- Labour, vesical hæmorrhage during, 10
- Laceration of the puerperal uterus, treatment of, 860
- Lafferty, Dr. D. J., address at the tuberculosis conference of Canada, 271
- Lafleur, Dr. H. A., address in medicine, Maritime medical association, 1901, 497
- typhoid fever; signs pointing to a probable perforation of the bowel: operation: absence of perforation or any lesion of the bowel, 89
- Larynx, congenital stenosis of the, 705
- Learmonth, Mr. G. Everett, neurasthenia, 472
- Leucocytosis and typhoidal perforation, 399
- Library, medical faculty of McGill college, 306
- Little, Mr. H. M., notes on the treatment of the hair in typhoid fever, 341
- some observations on the Widal reaction in typhoid fever, 337
- Liver, cirrhosis of the, 370
- in eclampsia, the role of the, 42
- Lumbar puncture, cocaine analgesia by, 894
- Lung, abscess of the, 230
- three cases of, treated, 230, 329
- M**ACKENZIE, Mr. A. F., relation of environment to evolution, 653
- Macphail, Dr. Andrew, the diagnostic value of hæmoglobin in syphilis (Justus), 843
- MacTaggart, Dr. D. D., intestinal obstruction by a foreign body, 933
- Malaria, 539
- its etiology, recognition and treatment, 403
- parasites, on the significance of certain phases in the life history of, 586
- Malignant disease, deaths from, 708
- disease of the uterus, 632
- Mammary carcinoma, statistics of, 853
- Martin, Dr. C. F., notes on tuberculosis, 111
- Mason, Mr. E. G., diagnosis and treatment of osteomyelitis, 568
- Mason, Mr. L. D., prophylaxis of infectious diseases by serum-therapy, 81
- Mastoid disease, the early diagnosis of, 968
- McCrae, Dr. J., sporadic cretinism in Canada, 604
- McEachran, Dr. D., address at the tuberculosis conference of Canada, 182
- McKechnie, Dr. Robert E., notes on a recent epidemic of small-pox, 253
- McKenzie, Dr. R. Tait, the treatment of spinal deformities by exercise and posture, 746
- McNeil, Mr. J. W., surgery of gastric diseases, 640
- Measles, general emphysema complicating, 8
- Medical defense, 715, 722
- education, 731
- the question of, 664
- library, McGill medical college, 889
- notes of a trip to Cuba, 577
- Medico-Legal diplomas, 65
- Medullary narcosis, 203
- report of a lipoma removed from the cheek under, 710
- Meningitis complicating pneumonia, 16
- Metastatic streptococcal infection, a case of, 620
- Migraine, ophthalmic, 293
- Missed abortion, 849
- Montreal medico-chirurgical society proceedings, 48, 153, 226, 302, 382, 468, 816, 872
- Morrow, Dr. W. S., a rapidly fatal case of scarlatina, 931
- Muir, Dr. W. S., infectious pneumonia, 694
- presidential address before the Maritime medical association, 1901, 609
- Mumps, optic atrophy due to, 294
- Murphy button, an absorbable, 461
- Museum notes, congenital malformation of the heart, 522
- Myeloid sarcoma of the ulna, 267
- Myxomatous degeneration of the chorion, 928.
- N**ARCOSIS, medullary, 203
- Nasal and ocular lesions, connection between, 780
- Neurasthenia, 472
- Neuralgia, severe facial, occurring as the first secondary symptom of syphilis, 625
- Neuritis, 973
- Neuritis from gunshot injury, 191
- in England, the epidemic of arsenical, 132
- retrobulbar, 295
- Notes on an epidemic of mild small-pox, 249
- on a recent epidemic of small-pox, 253
- on tuberculosis, 111
- O**BITER Scripta, notes on tuberculosis, 111
- Obituary, the Hon. J. J. Ross, 398
- Occipito-Posterior cases, symphysiotomy in, 296
- position, treatment of, 297
- Ocular and dental affections, connection between, 294
- hysteria, 294
- lesions, connection between nasal and, 789
- Ogilvy, Dr. Charles, medullary narcosis, 203
- Omental hernia with abscess in the sac, 233

Ontario medical association, proceedings, 551  
 Operation without touching the wound with finger or hand, 135  
 Operative procedure in contracted pelvis, the indications for, 41  
 Ophthalmia neonatorum, 790  
 Ophthalmic migraine, 293  
 Optic atrophy due to mumps, 294  
 Orthopedic treatment of deformities and disabilities resulting from diseases of the nervous system, with special reference to tendon transplantation, 719  
 Osteomyelitis: amputation, 97  
 Otomycosis, 382  
 Ottawa medical society, proceedings, 63, 158, 234, 302, 472  
 Ovarian pregnancy, 289

## PAGETS' disease, 949

Palate, an unusual tumour of the soft, 937  
 Pancreatitis, 628  
 Panophthalmitis, exenteration of, 792  
 postpartum metastatic, 791  
 Papilloma of the epiglottis, 705  
 Paralysis agitans, on the treatment of, 367  
 Paterson, Mr. Robert C., cocaine analgesia by lumbar puncture, 894  
 Pelvic disease among the insane, 632  
 infection, 954  
 Pelvis, fracture of the, 14  
 Perforation of the bowel, signs pointing to a probable: typhoid fever: operation: absence of perforation or any lesion of the bowel, 89  
 Pernicious anæmia, 457  
 Physical development, 717  
 Phthisis, treatment of by electricity, 950  
 Plague bacillus, studies upon the, with special reference to Haffkine's prophylactic, 257  
 Pneumonia, 850  
 as a complication of typhoid fever, 948  
 croupous, 456  
 croupous, on the treatment of, 960  
 in children, a new and early sign of, 852  
 infectious, 694  
 meningitis complicating, 16  
 report on the cases of, admitted into the Royal Victoria Hospital during the year 1900, 264  
 Poisoning by moonseed berries, 638  
 Pregnancy, case of ruptured, interstitial, tubal, with severe hæmorrhage into the abdomen, operation and recovery, 617  
 complicated by tumours, 954  
 ectopic gestation with subsequent normal, 269  
 fibroid tumours complicating 858  
 ovarian, 289  
 tubal, two cases of, operation: recovery, 11  
 treatment of, 313

Premiums to subscribers, 392  
 Preventive medicine and therapeutics in the nineteenth century, 116  
 Private wards question, the 137  
 Prophylactic value of the tub bath before labour, 860  
 Prophylaxis of infectious diseases by serumtherapy, 81  
 Puerperal eclampsia, 857  
 septicæmia, 38  
 uterus, treatment of laceration of the, 860  
 Pyloric stenosis with hypertrophy, 754  
 Pyrexial state, on the treatment of the, 369

## QUININE, vesical irritability and pain following moderate doses of, 626.

REAVLEY, Dr. E., a fatal case of ileo-colic intussusception, 765  
 Rectal feeding exclusively in acute appendicitis, 853  
 Recto-vaginal carcinoma, 36  
 Rectum, adeno-carcinoma of the, 817  
 Reinfection of sterilized skin from the cutaneous sweat glands, 461  
 Relation of environment to evolution, 653  
 Renal tension, treatment of by surgical means, 855  
 tuberculosis, symptoms of, 191  
 Resection of the bowel in strangulated hernia, 856  
 of the colon, 95  
 Reviews and notices of books, 46, 137, 220, 300, 374, 405, 550, 635, 712, 802, 862  
 Rheumatic fever, 205  
 Rockefeller scholarships, 566  
 Rodent ulcer, 57  
 Ross, Dr. George T., clinical notes, 705  
 Ross, Dr. J. J., intestinal obstruction by a foreign body, 933.  
 Russel, Mr. Colin K., leucocytosis and typhoidal perforation, 299

SARCOMA, frequency and recurrence of, 780  
 of nasal origin, 455  
 Scarlatina, a rapidly fatal case of, 931  
 Scybalous masses in the rectum of an infant, 624  
 Serumtherapy, prophylaxis of infectious by, 81  
 Shearer, Cresswell, a short review of Driesch's work on the mechanics of development, 342  
 on certain phases in the life history of malarial parasites, 586  
 Shepherd, Dr. F. J., medical notes of a trip to Cuba, 577  
 presidential address before the American dermatological association at the meeting in Chicago, June, 1901, 417  
 Skin diseases, the etiology and general



- Small-pox, 886  
   in America, the present epidemic of, 825  
   mild, 720  
   notes on an epidemic of mild, 249  
   notes on a recent epidemic of, 253
- Smith, Dr. A. Lapthorn, case of ruptured interstitial tubal pregnancy with severe hæmorrhage into the abdomen, operation, recovery, 617  
   two cases of tubal pregnancy, operation, recovery, 11
- Spier, Dr. J. R., meningitis complicating pneumonia, 16
- Splenic anæmia, with case, 717
- Spinal anæsthesia, 709  
   deformities, the treatment of, 745  
   meningitis, epidemic of, 716  
   tumour, a case of, 4
- Spleen, surgery of the, 462
- Sporadic cretinism in Canada, 604
- Sputum examination in pulmonary tuberculosis and its prognostic value, 769
- Static machine, some general principles of inter-polar currents with special reference to those of the 938
- Stewart, Dr. James, address at the tuberculosis conference of Canada, 173
- Stomach, carcinoma of the, 471
- Streptococcal infection, a case of metastatic, 620
- Strong, Mr. N. W., hypnotism, 979
- Sudden death in infancy and childhood, 23
- Super-heated dry air, report of cases treated with, 718
- Suppuration of the genito-urinary tract, 282
- Suprarenal extract in cardiac conditions, 845  
   gland, the 358
- Surgical diagnosis, notes on the use of tuberculin as an aid to, 759
- Surgery of gastric diseases, 640
- Symphiotomy, 296  
   in occipito-posterior cases, 296  
   two cases of, 227
- Synovitis, traumatic, 647
- Syphilis as seen by the ophthalmic surgeon, 699  
   lecture on, delivered to the students of the dental college of the province of Quebec, 277  
   ocular, 292  
   severe facial neuralgia occurring as the first secondary symptom of, 625  
   the diagnostic value of hæmoglobin in (Justus), 843
- TAYLOR, Mr. W. L., '01, the etiology and general treatment of skin diseases, 313
- Teaching of chemistry in medical schools, 1
- Teitelbaum, Mr. T. A., how to teach anatomy, 78
- Tendon grafting for paralysis following anterior poliomyelitis, report of a case of, 352
- The medical student and his prospective career, 69
- Thrombosis, venous, in cardiac diseases, 33
- Tongue, excision of one-half of the, 468
- Tooke, Dr. Fred. E., report on the cases of pneumonia admitted into the Royal Victoria Hospital during the year 1900, 264
- Traumatic ventral hernia, 763  
   synovitis, 647
- Treatment of phthisis by electricity, 950  
   of spinal deformities by exercise and posture, 745  
   of the hair in typhoid fever, notes on the, 341
- Tubal pregnancy, case of ruptured interstitial, with severe hæmorrhage into the abdomen, operation and recovery, 617  
   two cases of, operation, recovery, 11  
   notes on the use of, as an aid to surgical diagnosis, 759  
   value of, in determining the condition of tuberculous joint lesions, 285
- Tuberculosis, a discussion of the relation between human and bovine, with special reference to primary infection in children through the alimentary tract, 905  
   conference at Ottawa, the, 236  
   early, 627  
   genital, 950  
   notes on, 111  
   renal, symptoms of, 191
- Tumour of the soft palate, an unusual, 937
- Tumours, pregnancy complicated by, 954
- Typhoidal perforation, leucocytosis and, 399
- Typhoid fever, a report of the cases of, admitted into the Royal Victoria Hospital during 1900, 99  
   notes on the treatment of the hair in, 341  
   pneumonia as a complication of, 948  
   signs pointing to probable perforation of the bowel: operation: absence of perforation or any lesion of the bowel, 89  
   some observations on the vidal reaction in, 337  
   the hæmorrhagic diathesis in, 51  
   the value of camphor as a stimulant in, 368
- ULNA, myeloid sarcoma of the: excision, 267
- Uterus, a case of congenital absence of the, 848  
   malignant disease of the, 632

- V**ESSEL sinuses of the brain, wound of the, 788  
 thrombosis in cardiac diseases, 33  
 Ventral hernia, traumatic, 763  
 Vesical hæmorrhage during labour, 10  
 irritability and pain following moderate doses of quinine, 626  
 Vesico-vaginal fistula, 635  
 Vipond, Dr. A. E., sudden death in infancy and childhood, 23  
 Varicocele, treatment of hydrocele and, 855
- W**HOOPING cough, on some cerebral implications of, 131  
 Widal reaction in typhoid fever, some observations on the, 337  
 Wilson, Dr. S. Fairweather some general principles of inter-polar currents with special reference to those of the static machine, 938  
 Wolf, Dr. Charles G. L., the teaching of chemistry in medical schools, 1





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## Original Communications.

### THE TEACHING OF CHEMISTRY IN MEDICAL SCHOOLS.

BY

CHARLES G. L. WOLF.

With very natural curiosity, the teacher is often asked by the medical student, to what end, and for what purpose, is the teaching of a mass of chemical facts, such as that given in the ordinary course in chemistry in a medical college; and it must be confessed that, on serious reflection, there is a certain amount of saneness in an apparently idle question.

In the four years that embrace the student life of the average student, much is to be learned, and much, in fact, that is of obvious and instant value, and which provokes no question. One must therefore be careful, in a purely scientific study such as chemistry, that its aims and practical bearing be brought into view as prominently as possible. At the same time, admitting that it is a strictly scientific pursuit, the other extreme must be avoided, namely, that the scientific interest should be excluded in the furtherance of the practical or clinical side.

In the medical course as given to the medical student of to-day, much time is given, and rightly so, to the study of anatomy, physiology, pathology, surgery, and medicine, and usually the time allotted to chemistry is insufficient to go over the ground which the student is expected to cover. Two remedies for this state of things may be advanced. Either the time given to more purely medical work should be curtailed, which is highly undesirable, or a previous knowledge of chemistry should be exacted from the student on entrance. The latter is the ideal way, but it, too, unfortunately, has its disadvantages, which are more patent to the teacher than to others. Among these are, that the chemistry taught in some of the higher schools is to say the least superficial and unsatisfactory. For lack of other assistance, the teaching is done by men who have not themselves received a proper training and are, therefore, even with the best of intentions, not in a position to lay the proper foundations for the work to be followed out in the medical college. It is here

that the work of the medical teacher is rendered doubly difficult, as his work is then one, not only of upbuilding, but of undoing. This does not apply in most instances to those who have received their training in colleges and universities, as there the work done is of necessity of a higher grade.

In speaking of medical chemistry in this connection, may be mentioned the department of medical physics, to which it is so closely related. Here also, the need of a sound preliminary training is felt, so that the work of the teacher might be that of demonstrating the medical application of principles already learnt, rather than the inculcation of elementary laws which should have been thoroughly mastered before entrance to a medical school.

On the part of the teacher, it should be the constant aim to see that all the facts presented to the medical student are placed in the strictest correlation with those taught in the other branches of medicine. This would appear to be an obvious necessity, but from a somewhat careful examination into the methods of teaching which are followed out in many of the medical schools, both here and abroad, one is led to believe that either the necessity is not felt in many instances, or, is lost sight of in the press of routine work. For this reason, it is undesirable in a large university that the teaching should be done by men who have not had the opportunity of a medical training. In many cases the subject is taught with great thoroughness from a chemical standpoint, but in this thoroughness, the relation, and the intimate connection between the physiological and clinical process and the chemical fact, is not insisted upon. It has been an interesting matter of experiment with the writer, on pointing out such a relation, that a chemical fact difficult to remember and harder to understand, has been bound up with a clinical experience in such a way that both have been remembered and understood.

In the chemical work of the last decade and a half, no branch of the science has made such strides as physical chemistry. It was thought that at one time, organic chemistry would be the solution of many of those physiological problems which have been the subject of work by physiological chemists since the time of Wöhler. That this has not been so, subsequent events have proved, and the questions of physiology, although furthered, have not been solved through its agency. It is too early to say what will be the fruits of work done in physiological chemistry, working along the lines of physical chemistry, but one may be assured that the work done in digestion and in metabolism generally, will receive its greatest help in this direction.

For this reason, therefore, the subject of chemistry should be approached with the medical student from the physical point of view.

The theories of dissociation, osmotic pressure, and the connection of these with electrical phenomena and equilibrium should be fully taken up. A careful consideration of these relations would be of infinitely more value than the dreary testing for unknown salts which occupies so much of the valuable time of the student. In the allotment of time to the study of chemistry, at least a part of three years should be given, very especially if it be taken for granted that, in a large percentage of cases, the student come in with no preliminary training in the subject.

In the first year of the medical student's work, the time should be devoted to the examination of simple chemical reactions, and it is at this point, at the very outset, that the method of looking at these reactions from a physical-chemical standpoint should be taught. With weekly sessions of two hours each in the laboratory and sufficient didactic work besides, the subject may be reviewed in a satisfactory manner. Too much time should not be taken up with analytical processes, which are after all but a very special branch of chemistry, whose aim is but little understood by the student, and less made use of in his subsequent career as a practitioner. This does not by any means imply that the analytical part should be entirely neglected, but that it should not be made the be all and end all of a course in chemistry.

In the second year work a chemical examination of physiological processes will occupy an equal amount of time. The work in this department has grown so heavy that a proper, though elementary review will fully take up the amount of time given, without entering into the clinical side of the work. The laboratory course should be essentially one devoted to the examination of physiological processes from the chemical side, and the effect of varying conditions on the course of the reaction and of the products formed.

In the third year the course should be distinctly a clinical one, and should have to do more particularly with the clinical examination of the various fluids of the body which are met with in the hospital laboratory, and at the bedside. At this stage in the student's course he is in a strong position to appreciate the full clinical significance of the chemical reactions which he performs. He has seen and followed the cases, and he knows the clinical meaning of a change in analytical results.

It may be objected to this division of the chemical course into three parts, that the time is more than can be allowed under the present conditions. This may be answered by assuming that the course in the third year does not take up the entire year, as indeed it need not, and more importantly by contending that the results in aiding the study of physiology, pathology, and medicine, will fully justify the extra time expended.

*Cornell Medical College, New York, Department of Chemistry.*



## A CASE OF SPINAL TUMOUR.\*

BY

F. MORLEY FRY, B.A., M.D.

On July 9, 1900, there came to me Mrs. F., aged 63, *complaining of incontinence and increased quantity of urine, weakness, swelling of feet, shortness of breath, lumbago, slight staggering, and burning sensation in the soles of the feet.*

Her *personal history* is that of a well educated French woman who taught singing and the French language for years and who has recently managed two large clothing establishments. She thinks she escaped scarlet fever and diphtheria. Neither she nor her family give any history of syphilis, tuberculosis, rheumatism or neuropathy. She was married in middle life, never pregnant, and enjoyed good health until two years ago, when she nursed her husband through a long illness, which caused her most extreme fatigue and anxiety and ended in death from cancer of the neck.

*Present illness* dates from her husband's death, since when she has been weak and poorly. She gives no very definite account of the onset of symptoms, but her weakness, shortness of breath, and swelling of feet go back a year or two, while her incontinence, backache, feeling of heat in the feet and staggering, go back only several months. There has never been any difficulty in controlling the evacuation of the rectum. Lately she has been eating large quantities of fruit daily and excessive amounts of candy (chocolate creams, one pound a day).

*Present Condition.*—She is a well nourished woman of large frame, very pale in the face, lips and conjunctivæ of fair colour; muscles are very large and soft; fat is abundant; skin is smooth, warm and moist; tongue slightly coated; slight constipation, slight œdema of the feet and shins. Temperature 98 2-5° F.; pulse 80, small, regular, of moderate tension; respirations 20., quicken markedly on slight exertion. *Lungs* normal, no hydrothorax. *Heart*—abundant fat renders inspection, palpation and percussion unsatisfactory; no enlargement could be made out; there is no thrill; the sounds are feeble perhaps but clear and sharp cut, rhythm normal, no adventitious sounds. As the pulse is small, heart sounds weak, and œdema of the lower extremities and dyspnoea present, there is probably an inefficient myocardium. *Digestion* and appetite excellent, no stomach symptoms, no enlargement of liver, bowels slightly constipated. No enlargement of spleen or lymph nodes. *Urine*—pale,

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\* Read before the Montreal Medico-Chirurgical Society, Dec. 14, 1900.

clear, sp. gr. 1010, no albumin (to cold nitric and picric acid tests), no sugar; microscopically, no crystals, casts, or any formed elements. Quantity much greater than previously.

*Nervous System.*—She locates the backache in the lumbar region at the level of the twelfth dorsal or first lumbar *vertebra*. It is generally referred to the median line but soon radiates bilaterally across the back and frequently encircles the trunk, giving her, as she says, the painful feeling of a tight belt. With the incontinence of urine there is no scalding nor marked frequency of micturition. When lying or sitting she can control the vesical sphincter, but on walking or when tired, urine trickles away. There is no deformity in the spine, no tenderness on pressure or on standing. *Motion*—Resisted flexion and extension of all the joints of the lower extremities fail to elicit any certain weakness, the power being quite as much as one would expect, and there is no appreciable difference between the two sides.

*Sensation.*—Tactile sensation and sensation of pain normal on abdomen and lower extremities. There was on one occasion during an attack of back pain, a zone from a-half to one inch wide just above the umbilicus, which was hyperæsthetic. *Reflexes*—Patellar difficult to elicit but always obtainable. *Cranial nerves*—First: distant vision as good as ever, pupils react to light. Second: smell normal. Third, fourth and sixth: ocular muscles all act normally. Fifth: sensation on the face normal, masticatory muscles act well. Seventh and eighth: there is no facial paralysis and hearing is normal. Ninth, tenth, eleventh and twelfth: taste, deglutition and phonation normal. heart, lungs, and bowels well innervated, muscles of neck act normally, tongue moves normally. All cranial nerves, then, perform their functions well. *Eyes*—Distant vision about 6-12, myopia 3 D., almost neutralizes her presbyopia of 4 D., so that + 1 D. gives her normal reading power though she is 63 years old. Pupils react to light and to accommodation. Fundus normal in each eye, discs normal colour, vessels of normal size and distribution. *Romberg's sign*—She stands normally when feet together and eyes shut.

*Diary*—Hoping it was a case of mere constipation, chlorosis and general muscular weakness, I decided to attack the constipation and support the muscular system, while reducing the amount of urine. I ordered rest, prohibited the candy, and gave fl. ext. cascara sagrada, m x and tinc. nuc. vomicæ, m. xv, t. i. d. Twelve days later (July 21) she was better and I now gave nux only. On August 1st, dyspnoea and œdema being present still, I gave tonic doses of digitalis and strychnine, under which she recovered from these, but all the cord symptoms were increasing. I feared she had pernicious anæmia with cord symptoms, but

an examination of the blood showed red cells, 5,020,000, no poikilocytosis whatever, no leucocytosis, lymphocytes 14%, transitionals and splenocytes 16%, polymorphonuclears 70%, eosinophiles 1%, *i.e.*, normal, and amply excluding pernicious anæmia.

An elderly woman with incontinence of urine, slight staggering, and perverted sensation in the soles of the feet certainly suggested tabes, but the pupils, kneejerks, and optic discs being normal and Romberg's sign absent, prevented such a diagnosis being made. I now pushed strychnine and succeeded in giving her complete control of her bladder even while walking. This, however, slowly disappeared on withdrawing the drug, and the pain in the back and other nervous symptoms increased. A feeling of coldness over the lumbar region was now added.

Within a few weeks (in August) I was twice called to her on account of the most severe pain in the back, cutting in nature, localised at times, and at times encircling the trunk, and requiring morphine  $\frac{1}{2}$  grain by the mouth. I now decided there was a cord trouble. While alleviating and trying to clinch my diagnosis, I gave arsenic in increasing doses. Steadily and slowly, through several weeks, the pain diminished considerably, till on October 25th, I found her practically free from it and she resumed her work, suffering only from incontinence of urine, for which I again pushed strychnine. I have not seen her since.

To sum up:—Here was a woman whose dyspnœa, œdema, and weakness, due to myocardial insufficiency, were cured by rest, digitalis, and strychnine. There remained, however, incontinence of urine, perverted sensation in sacral and plantar regions, slight ataxia, violent pain about the lumbar cord with painful girdle symptoms, all of which had to be explained. A rapid diagnostician would exclaim: Tabes! But this could not be diagnosed yet at least when marked ataxia, Romberg's sign, Argyll-Robertson pupil, and optic atrophy, were all absent; while kneejerks were present, and severe pain dominated all. Pernicious anæmia is excluded by the normal number and form of the red cells. Transverse myelitis is probably excluded by the normal motor power of the legs and good control of the rectal sphincter. Absence of paralysis and of atrophy exclude anterior poliomyelitis, and absence of deformity and of tenderness on pressure or on standing, excludes caries. What about hysteria, which accurately simulates every symptom which flesh is heir to? The patient finds the incontinence of urine extremely unpleasant, she is very active and will not consent to take to bed, but goes twice a day to her factory when her strength permits, and she has no symptoms or signs suggesting hysteria. The dominating pain is typical of one condition which explains the other symptoms, and this condition I have diagnosed, *viz.*, tumour (in its broadest sense) on the spinal cord. Be-



cause the cord transmits motor and sensory impulses and performs its functions in reflexes, I think the tumour is not in the cord, nor does it more than slightly press upon it; because the pain is so severe and encircles the body, I think the tumour involves the nerve roots.

The symptoms subsided before I put the therapeutic test for syphilis, and I am ignorant of the nature of the tumour. There is no evidence of its being syphilitic, tuberculous, or malignant; perhaps it is fibroma. What a victory for iodide had it been prescribed early!

## GENERAL EMPHYSEMA COMPLICATING MEASLES.\*

BY

DAVID J. EVANS, M.D.,

Lecturer in Obstetrics, McGill University.

Harry, aged four years, was admitted to the isolation ward of the Montreal Protestants' Infant Home on July 7, 1900, suffering from measles. The rash was apparent on face and chest. His temperature at noon was 102° F., respirations 30, and pulse 148. His general nutrition was fair; there was no evidence of rachitis. Examination of the chest revealed the presence of moderate bronchitis, and the heart was normal. He had a discharge from the left ear, which had been present for some weeks before admission. The disease ran a moderately severe course; the cough, while troublesome at times, was never severe or paroxysmal.

Five days after his admission, the respiration became rapid and shallow but no pneumonic areas could be detected in the chest. On the sixth day the nurse called my attention to a diffuse swelling, which had appeared that morning in the left supraclavicular region. On palpation the tumour was soft, not crepitant and evidently painless. There was no discolouration of the skin. No swollen glands could be felt in the neighbourhood, so that I was at a loss to account for the nature of the swelling. It was noticed that the child had lost his voice. Next morning the swelling was found to have extended in all directions, though chiefly downwards over the sternum as far as the fourth rib. On palpation distinct crepitation was obtained. The child's respirations were rapid and shallow, his face swollen and somewhat cyanotic. Movement of the left arm seemed to give rise to pain. Crepitation could be obtained over the whole head, back, abdomen, and left arm, and extended down the left thigh as far as the knee. By percussion a hyper-resonant note was obtained over the chest and back. It was impossible to hear the breath sounds on account of the crepitation when the stethoscope was applied to the skin. The child seemed anxious and devoted his whole attention to breathing. He took small quantities of liquid nourishment at short intervals, and beyond a slight diarrhoea, there was no evidence of intestinal derangement. His temperature varied between 102 and 104°. The treatment consisted of strychnine and whisky.

On the eleventh day of his illness the general condition of the child was somewhat improved though the emphysema remained unchanged.

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\* Read before the Montreal Medico-Chirurgical Society, Nov. 30, 1900.

As the general condition improved the emphysema gradually disappeared, and on the thirteenth day of illness the child's voice returned, though crepitation could be obtained in various areas some days later. The child eventually recovered and is in good health at present.

On turning up the text-books I find but very little reference to general emphysema. Fowler, in Allbutt's System of Medicine, reports seven fatal cases, all associated with tracheotomy for laryngeal diphtheria. Guillard (*Jour. des Pract.*, Nov. 25, 1897), reports three cases of subcutaneous emphysema complicating measles occurring in one family. Holt states that the condition may occur in connection with whooping-cough and in connection with laryngeal stenosis. Cotton (*Arch. Pediat.*, Sept., 1900), has reported a fatal case in a child aged seven and a-half years. The patient had an attack of measles in July, which left her with a chronic bronchitis. The following March, after a severe fit of coughing, a ridge appeared over the right clavicle, which gradually extended in all directions. The general conditions and symptoms in this case corresponded very closely to the case I report, except that the general cutaneous distension in Cotton's case was more marked. Wrinch reports a case where the condition appeared consequent upon a cough without severe paroxysms, and post-mortem revealed a condition of miliary tuberculosis. Wrinch suggests that this condition may be differentiated from lesions due to the bacillus *aërogenes capsulatus* by the fact that in the latter the emphysema increases post-mortem.

With regard to treatment, Cotton suggests that "from the apparent fact that the condition is intensified by coughing or deep inspiratory movements the indications would seem plain to relieve the cough and restrict respiration by any means in our power." He also suggests puncture or incisions, with the insertion of drainage tubes, in severe cases.

The occurrence of this complication is probably dependant upon a congenital weakness of the pulmonary vesicles, especially those situated close to the trachea.



## VESICAL HÆMORRHAGE DURING LABOUR.\*

BY

GEORGE A. BROWN, M.D.,

Physician to the Montreal Dispensary.

Mrs. A. B., aged 46 years, multipara, has had eleven children and after each labour has had some complication, usually post-partum hæmorrhage.

On Wednesday evening, December 5th, patient had a fall. On Thursday, she complained of pain in her left hip, which did not prevent her from sleeping Thursday night. At six o'clock the following morning she awoke with pain in her bladder and a desire to urinate, but was unable to do so. At times she had a bearing-down sensation which gradually developed into labour pains. On seeing her I catheterized her and drew off about half a pint of bloody urine which, on microscopical examination, contained nothing but blood.

At two o'clock in the afternoon I was again called, as the membranes had ruptured and the pain in her bladder and the desire to urinate had returned. I catheterized her again and drew off some more bloody urine. On making an external examination I found the child in the fourth position (dorso-posterior) with the head in the upper zone and the breech presenting. The vaginal examination was rather puzzling, as I could not find the external os and the anterior vaginal wall descended into the vaginal passage, just like a large tumour, which was more marked during her pains.

During the afternoon the pains were irregular and the patient complained of their peculiar tearing character, as if her bladder was being dragged out of her. After the pain became regular there was no progress, as the pressure of the breech came on the anterior vaginal wall. I then decided to keep her in the knee and chest position until the external os dilated, and at the same time during every pain I held the anterior vaginal wall away from the breech as it was forced against the os. After the os was dilated, the child was extracted in the usual way.

On December 8th, I catheterized the patient again and drew off another half pint of dark bloody urine.

On December 9th, the patient could not make her urine in the evening, although she had been able to do so in the morning and on the previous evening. I then catheterized her again, drawing off about a pint of ammoniacal urine, which was still bloody; and as I withdrew the catheter she passed some small clots. I placed her on urotropine gr.  $\frac{1}{2}$ , three times a day. On December 10th, she was able to make urine and passed a few more clots. The odour had begun to disappear, and on the 11th the urine was normal.

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\* Read before the Montreal Medico-Chirurgical Society, Dec. 14, 1900.

## TWO CASES OF TUBAL PREGNANCY—OPERATION— RECOVERY.\*

BY

A. LAPHORN SMITH, B.A., M.D., M.R.C.S., Eng.,

Gynæcologist to the Montreal Dispensary ; Surgeon-in-Chief of the Samaritan  
Hospital for Women.

My eleventh and twelfth cases of tubal pregnancy were reported to this society on the 19th December, 1898, and were published in the MONTREAL MEDICAL JOURNAL on the 15 February, 1899. All of these twelve cases were operated upon, some before and some after rupture, and all recovered. Since then I have had two others, and although cases of tubal pregnancy are not rare I think they are always interesting, especially when they recover.

*Case I.*—For my thirteenth case I was indebted to Dr. Arthur Johnstone, assistant surgeon to the Samaritan Hospital, who also supplied the following history. He was called on the 22nd May, 1899, to Mrs. H., 39 years of age, who had been married since the age of 17 without ever having been pregnant. She had never had any menstrual trouble until six weeks before the doctor was called, when, for the first time in her life, she missed a period. Three weeks later she jumped off a car and began to have a good deal of pain in her right side so that she sent for her lodge doctor who had to give her morphine to relieve it. As she was not getting any better, she then sent for Dr. Johnstone, who on examining her found a mass on the right side of the pelvis. She was suffering so much that the morphine had to be continued, but after the doctor had examined her every day for a few days and found the mass growing, he decided that he had a tubal pregnancy to deal with and asked to have me in consultation. At this examination I did not feel sure enough of the condition to operate at once. Next day she felt somewhat better and insisted upon getting up, but was immediately taken with the same severe pain in her right side. As her pulse began to go up a good deal Dr. Johnstone called me again about three or four days after my first examination, and then I had no hesitation in agreeing that she had a ruptured ectopic gestation.

She was accordingly sent at once to the Samaritan Hospital in the ambulance and, as soon as preparations could be made, her abdomen was opened, just six weeks from the date that her menstruation should have come on. There was about a quart of free blood in the abdominal

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\* Read before the Montreal Medico-Chirurgical Society, Nov. 30, 1900.

cavity and several large handfuls of clots. Nature had made some effort to wall off the blood, but had been unable to do so. As the bleeding was actually going on, my first care was to put a ligature on the ovarian artery, but as this did not quite arrest the hæmorrhage, another was put on the uterine artery near the cornu, which proved effectual. A partly macerated fetus, estimated to be about six weeks old, was found among the clots. The ruptured tube was about the size of an orange. The left tube and ovary were also removed to avoid future accidents, and the abdomen was washed out with sterilized salt solution and about two quarts of this liquid were left in the peritoneal cavity. Apart from a little trouble in getting the bowels started the patient made a good recovery and is now in better health, she says, than she has ever enjoyed in her life. I think that Dr. Johnstone deserves great praise for his prompt diagnosis of a condition which is always obscure, but the early recognition of which is a matter of vital importance. I regret that I cannot show this specimen as it was lost during the summer; but I have here the specimen from my next case.

*Case II.*—My fourteenth case of tubal pregnancy was Mad. J. D., aged 38, referred to me by the kindness of Dr. Jeannotte. She was married at the age of nineteen; has had eight children, the last of which was born three years ago, and has always had normal deliveries. She has had two miscarriages, the last one six years ago at three months pregnancy. Last winter she was two months late with her period and this was followed by a profuse flow, but there was no sign of a miscarriage. She was then regular until June, since which time she has had a period every three weeks. On the twenty-third of August she was taken with a pain in her left side, after having passed a month and a half without a period, and a little flow began at the same time. Every two or three days she would have a pain in her left side so severe that she would cry out, and the doctor would have to give her morphine. The flow consisted apparently of venous blood. She had great difficulty at times in passing water and emptying her bowels. She had no morning sickness, which she was accustomed to have with all her pregnancies. During the last two months she has passed through the hands of four physicians, the last two of whom including Dr. Jeannotte, diagnosed tubal pregnancy and urged her to submit to immediate operation.

On examination I found a mass continuous with the uterus and completely filling the pelvis extending an inch below the cervix and rising a little above the pelvic brim. It could not be moved because it was so firmly wedged in the pelvis. The sound entered nearly five inches forwards, thus eliminating the possibility of a retroflexion. On opening the abdomen a coil of intestine was found lying across the tumour which



latter appeared almost black through the transparent empty bowel. The intestine was carefully dissected off with the finger, and then the mass was seen to be different from the uterus although firmly glued to the latter over the whole extent of its posterior surface as well as being adherent to the left broad ligament. Before it could be extracted it was necessary to cut the tube free from the uterus. The uterus was then attached to the abdominal wall to prevent it from falling back into the large cavity left by the removal of the tumour. The time of operation was twenty-two minutes; and the quantity of A. C. E. mixture used was one and a-half ounces.

Dr. Macphail supplied me with the following notes on the condition: "A tumour was handed to me by Dr. Lapthorn Smith on the 12th November for examination. It weighed nineteen ounces, was cylindrical in shape with rounded ends, length  $5\frac{1}{2}$  inches, diameter  $3\frac{1}{4}$  inches. One end was free and regular in form, the other showed three irregular cysts, one the size of an egg, the other two of the size of chestnuts. Projecting between these cysts was an irregular body with all the characteristics of an ovary, with cut arteries several in number. The whole tumour was in a definite capsule but the covering of the cysts was very thin and dark in colour. Two of the cysts were continuous with each other and all had common communication with the central mass. They were filled with a number of clots, brown in colour, firm in texture, and each of the size and shape of a beechnut. The main mass when cut into consisted of blood uniformly clotted, which was easily turned out of its shell. The lining membrane was shreddy in appearance and, upon examination, proved to be chorion in an advanced stage of fatty degeneration. The tumour is one of the Fallopian tubes and due to extra-uterine fecundation."

I wish to say in conclusion, while it is a great gratification to be able to report fourteen cases of tubal pregnancy (they have all been reported and most of the specimens have been shown in this society), and while it is still more gratifying that I am able to say that they all made good recoveries, I do not claim any great credit for this result, which was very largely due to the skill of my friends in general practice who discovered them for me and to their energy in insisting upon the patient submitting to immediate operation, very often much against her will. Apart from the small merit of carrying out a rigorous asepsis and thorough hæmostasis, I only claim the credit of bringing the idea of tubal pregnancy frequently before their minds by reporting to the society such cases as have fallen into my hands as I have done in the above cases.

## FRACTURE OF THE PELVIS.\*

BY

J. ALEX. HUTCHISON, M.D.,

Lecturer in Clinical Surgery, McGill University ; Surgeon to the Montreal General Hospital.

*Case I.*—E. G., aged 22 years, was crushed between an engine and car on December 15th, 1898, and was admitted to the Montreal General Hospital the following day. On examination, a large mass was found filling the right iliac fossa, extending towards the umbilicus, with ecchymosis over the whole area and extending into the right scrotum.

The patient stated that an attempt had been made soon after the accident to pass a catheter. With difficulty, and by the aid of my finger in the rectum, I passed a catheter and drew off a large quantity of bloody urine. There was no apparent diminution in the size of the tumour. No crepitus could be made out. The patient's general condition was good, temperature 100° F., pulse 86. The bladder was washed out at regular intervals during the following 6 days; urine free from blood.

As there was some elevation of temperature and pain over the mass, under ether anæsthesia, I made a long incision and found an extensive hæmatoma, extra-peritoneal, communicating with an oblique impacted fracture of the horizontal pubic ramus.

On turning out the blood clot at the bottom of the wound, there was seen a rent in the side of the bladder. This clot closed the bladder wound, and explained why urine was held in the organ. The cavity was irrigated, and a large rubber drain introduced into the bladder and surrounded by iodoform gauze. A soft rubber catheter was introduced into the urethra and tied. As the fractured ends were in good position, wiring was not thought necessary. Culture reported to show atypical bacillus coli. The patient continued to improve and was thought to be almost out of danger, when he died somewhat suddenly, 24 days following the injury. No autopsy. I thought death was due to pulmonary embolism.

*Case II.*—McK., aged 24 years, was admitted to my ward October 26th, suffering from compound, comminuted fracture of both legs. Rupture of the bladder. Fracture of pelvis was not recognized. Death followed in a few hours.

Autopsy, specimen exhibited by Dr. Johnson. (See page 59).

*Case III.*—C. L., aged 21 years, was admitted to the Montreal General

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\* Read before the Montreal Medico-Chirurgical Society, Nov. 30, 1900.

Hospital, March 24th, 1900, under Dr. Armstrong, having been crushed between two cars the previous day. Suprapubic cystotomy was performed immediately as attempts to pass a catheter were unsuccessful. Three days later an incision was made in the median line exposing a fracture of the horizontal pubic ramus on the right side. The fragments were wired with silver wire. There was a rupture of the bladder opposite the fracture, which was closed by sutures, a rubber drain being left in the upper part of the bladder. The cavity leading to the fracture, after thorough irrigation, was packed with iodoform gauze. The patient did very well for some days, but eventually died 24 days subsequent to the accident. Autopsy did not show any other injury than that already described. Death was due to septicæmia.

*Case IV.*—An elderly woman fell from a gallery, and died shortly after admission to the hospital. (Dr. Elder's service). Autopsy showed fracture of the pelvis with laceration of the iliac veins.

*Case V.*—A. V., died shortly after admission to the hospital, having fallen down an elevator shaft. Fracture of the pelvis with protrusion of the head of the femur through the acetabulum, bladder not ruptured.

Great violence, usually direct, is necessary to cause this form of fracture owing to the strength of the bones. The importance of the injury is due to the fact that there is frequently associated with it extensive injury to neighbouring soft parts. The peritoneum has been opened, the pelvic vessels and nerves torn, and the rectum injured. Three of the five cases cited were complicated by injuries to the bladder and urethra, and form a class of great clinical interest.

Rupture of the bladder may be due to the violence offered, or to puncture by a fragment of bone. The injury to the urethra is usually in the membranous or bulbous portion. The extravasation of urine into the large pelvic space leads to a rapid septicæmia, and in almost all cases to a fatal result. Text-books, with one or two exceptions, do not give the reader a due appreciation of the gravity of the condition.

I am indebted to Dr. Armstrong for permission to quote case No. III., Dr. Elder for case No. IV., and to my House Surgeon, Dr. L. M. Murray, for notes of the cases.

[For discussion on these cases see page 59.]



## MENINGITIS COMPLICATING PNEUMONIA.\*

BY

J. R. SPIER, M.D.

I take the liberty of presenting this case to you thinking it may prove interesting, as one presenting to my mind a true case of meningitis (cerebral) due to infection by the pneumococcus, and also presenting some rare features. The correctness of the diagnosis is a question, also, which may give rise to some discussion.

E. P., female, aged five years, of mixed negro and white blood, was suddenly taken ill on the morning of November 26th, 1898. I saw her immediately after her recovery from a prolonged chill on that morning. Temperature, 103° F.; respirations, 36; pulse, 120. The child's general condition was good with no evidence of mental disturbance. Examination of the lungs showed slight dulness over the apex of the lower lobe of the left lung. Harsh breathing and a few crepitant râles were heard over this area.

*Diagnosis.*—Lobar pneumonia.

*Treatment.*—Rest, cotton wool jacket, a mixture of liquor ammon. acet. and liquor strychninæ.

*Previous History.*—She had been a somewhat delicate child, suffering considerably from gastric troubles, but had never been seriously ill. For a period of over a year, six months before the present illness, she had been the subject of an extensive psoriasis which had been totally cured in a couple of months by the use of thyroid extract.

*Family History.*—Entirely negative.

*November 27th.*—At 2 a.m., the child had several short convulsions and became delirious and unconscious. T., 104.1°; R., 40; P., 152, weak and irregular. Her extremities were cold and the circulation extremely bad. She was ordered ice to the head, cold spongings, stimulants and frequent doses of bromides and digitalis.

During the day her condition remained unchanged; several severe convulsions occurred; the pulse became almost imperceptible. R., 36 to 45; temperature continually above 104°. The child was very restless, violently throwing herself about. The head was retracted, eyes divergent, pupils reacted slowly to light and varied somewhat in size. The lower lobe of the left lung was markedly dull; the breath sounds over this area weak, and only an occasional râle was heard.

In consultation with Dr. Springle it was decided to try opium to calm

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\* Read before the Montreal Medico-Chirurgical Society, Dec. 14, 1900.

her and at the same time to strengthen the heart. It was used hypodermically in conjunction with strophanthus.

*November 28th.*—No further convulsions. Patient quiet under continued small doses of opium. Otherwise her condition was absolutely unchanged. Treatment unchanged.

*November 29th.*—Condition unchanged except for a slight strengthening of the pulse. Absolutely no physical signs in the lungs, except dullness and weakened breath sounds. T.,  $104^{\circ}$ ; R., 32; P., 148. Tuberculosis was suggested as being present.

*November 30th* (fifth day of the disease).—Fall in temperature which ranged between  $102\frac{1}{2}^{\circ}$  and  $103\frac{1}{2}^{\circ}$ . R., 32 to 40; P., 140 to 148, decidedly stronger. Patient was conscious and resting quietly. Eyes natural. Examination of the affected lung showed dullness, loud blowing breathing, and numerous moist râles. Discontinued the opium and strophanthus.

*December 1st.*—T.,  $103^{\circ}$ ; R., 40 to 48; P., 140 to 148, decidedly stronger; her general condition the same.

*December 2nd.*—Crisis occurred. T.,  $98\frac{1}{2}^{\circ}$  to  $99^{\circ}$ ; R., 32 to 36; P., 120 to 136; condition of the lungs unchanged.

The following day the fever rose again to  $100\frac{1}{2}^{\circ}$  and fell again on the next to  $99^{\circ}$ , a purgative having been given. From this time on for a period of three weeks the temperature ranged between  $99^{\circ}$  and  $101^{\circ}$ , being somewhat higher in the afternoon. The child during this period, however, became notably stronger in muscular and mental power, but gradually became more emaciated.

Change occurred in the lung with remarkable slowness, a gradual increase in the resonance being noted until, at the end of this time, only in the apex and base of the affected lobe could any signs of disease be detected, the breath sounds being slightly harsher over these areas and small moist râles also being present. Cough remained very troublesome with slight expectoration. At this time the sputum was examined for tubercle bacilli with negative results.

*On December 23rd*, twenty-one days after the crisis occurred, the temperature was normal in the evening for the first time to my knowledge, and remained so from this time to the close of the case.

Early in January the apex of the affected lobe had cleared up, but the base still presented the signs above mentioned. The child, however, was now regaining flesh. Towards the end of January, the only defect to be noticed was the presence of a few small moist râles at the outer side of the base on forced inspiration. The child though still delicate was rapidly increasing in weight.

In the early part of March, I again saw her. The affected lung was

apparently free from disease, the only change noted being a slight weakness in the respiratory murmur. The child was apparently in perfect health with the exception of being troubled with occasional headaches, where before her illness she was not.

The first question to arise in discussion of this case is whether a true meningitis existed, or whether simple congestion, an effect of the high fever, was the cause of the nervous phenomena as is the case in many acute diseases of childhood. I consider the case to be one of meningitis for the following reasons:—

The convulsions set in on the second day of the disease and not, as is usual, ushering in the attack, and they were accompanied by a further rise in the temperature. They were followed by other symptoms namely profound unconsciousness, retraction of the head and what seems to be of the most importance, strabismus and sudden collapse as shown in the history of the case evidencing interference with the cranial nerves. This also shows that the meningitis was basal.

Considering then meningitis to be present, I may here point out the extreme rarity of this complication by referring to the few authors I have had the opportunity to consult.

Fagge makes hardly any reference at all to nervous complications in this disease. Nearly all American authors discuss at some length these nervous symptoms.

Holt mentions that meningitis was present in two of his cases, the convulsions as in this case coming on in the course of the disease. Nervous symptoms may be so severe as to simulate meningitis or cerebro-spinal fever but there are no local paralyses as in this case unless meningitis be present.

Osler favors the idea of the infection of the meninges by the pneumococcus. In eight out of one hundred fatal cases meningitis was found to be present but it was cortical in situation, and on this account seldom recognized until the post-mortem. He regards meningitis as a very fatal complication.

Various authors under the headings of cerebral pneumonia bring into prominence the severe nervous symptoms which may accompany pneumonia, but without regarding them as being complicated by meningitis.

Menot in Keating's Diseases of Children, regards meningitis as a very rare complication indeed.

As regards the diagnosis, I may say that cerebro-spinal fever complicated by pneumonia, and tuberculous meningitis, were thought of during the attack. The latter seemed very probable but was disposed of by the fact of recovery. As regards the former, it is true that all the symptoms were present of an attack of cerebro-spinal fever of a short

and moderately severe type, but the pneumonia had been present for a day without any nervous symptoms, and the onset of the meningitis was accompanied by a further rise in temperature, showing decidedly that the pneumonia had the right of priority. Also, as far as I can learn, cerebro-spinal fever is very rare, if present at all in this city for many years.

Osler mentions that it is impossible in sporadic cases of cerebro-spinal fever, where the diagnosis is open to doubt and complicated by pneumonia, to say whether the pneumonia is a complication of the fever or whether the case be one of pneumonia with meningitis. He mentions, however, that most cases of meningitis in pneumonia are cortical.

Holt describes a secondary meningitis in connection with pneumonia, and also says that most cases are cortical and fatal. Most authors unite it stating the pneumococcus to be the most common exciting cause in meningitis.

Other points of interest in this case are:—

(1) The relative proportion between the pulse and the respiration which in health is one to four and in which in pneumonia is generally altered to one to two or three. It remained in this case much the same as in health, especially after the onset of the meningitis. The cause of this is not apparent, considering the large area of lung involved.

(2) The favourable effect of the use of opium and strophanthus in quieting the patient and strengthening the heart's action in a short time, may be noted.

(3) The long-continued low fever accompanying the absorption of the inflammatory products and also the remarkable slowness of this process. The almost complete absence of expectoration may in some measure explain this tardy convalescence as practically all the products of the inflammation had to be got rid of by absorption.

A possible theory that occurred to me was one depending on the effect the administration of the thyroid extract had on the psoriasis that was present some time before. The thyroid gland is admitted to have a great influence over the metabolism of the body. The effect the administration had on the psoriasis, may show that there was lacking a sufficiency of the products of this gland so much as to impair the recuperative powers of the patient. So strongly was I impressed with the theory, that I began giving her thyroid extract late in December. Whether this had any effect in hastening absorption I cannot state.



## A CARDIAC CASE FOR DIAGNOSIS.\*

BY

G. GORDON CAMPBELL, M.D.,

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The case which I bring before you to-night is of interest because of the difficulty of harmonizing the physical signs either with any of the usual forms of heart disease or with the more commonly met with congenital malformations. The notes of the case are briefly as follows:—

V. H., female aged 13 years, first came under notice as an out-patient at the Montreal General Hospital in April, 1899, when she was brought to my clinic complaining of weakness and difficulty of breathing at night.

Personal history, as given by her mother, was negative as regards rheumatism, chorea or any of the infectious diseases. She had never suffered from any illness of any sufficient moment to be remembered by her mother. The present condition for which she sought relief had come on gradually, and no definite date could be fixed for its onset.

On examination, she was found to be a rather undersized girl, intelligent, and suffering from no pain or discomfort. There were no evidences of rickets or of congenital malformations about the body. The mucous membranes were pale. She had not menstruated.

*Thorax.*—There was considerable bulging of the chest wall corresponding to the outlines of the heart. The cardiac impulse was heaving and visible over a large area of which the centre was about the nipple. A thrill could be felt in the second left interspace about one inch from the sternum; it was alternate with the impulse. Cardiac dulness extended from the second rib above and from one inch to the right of the sternum to the left reaching to the anterior axillary line. On auscultation, the first sound at the apex is short and weak preceded by a faint rumbling murmur, heard only over the apex and presystolic in rhythm. At the base the second sound was reduplicated, of normal intensity at the aortic cartilage, but extremely loud over the second left interspace at about an inch from the sternum. It was accompanied by a loud rough diastolic murmur, of maximum intensity at the second left interspace at the border of the sternum and propagated to the left and down the left border of the sternum. This murmur was apparently not associated with the aortic second sound as its intensity gradually diminished towards the aortic cartilage.

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The left lung was possibly slightly less resonant than the right. A few dry râles could be heard over the larger bronchi, and the breathing was noted to be somewhat harsher in the left than the right lung. The pulse was small, but normal in character and noted absolutely free from any water-hammer character. There was no capillary pulsation.

The patient was put upon an iron mixture and continued to attend the clinic at intervals of about two weeks until August 10, 1899. The anæmia diminished very much, and the symptoms for which she sought advice disappeared.

The notes taken at the time were necessarily brief as the back of the patient's prescription card was utilized for the purpose.

On October 11th, 1900, the patient was again brought to the clinic by her mother who stated that she had had a convulsion the previous night. On enquiry it was found that the patient had had seven or eight in all of these attacks which from the description given were apparently dyspnœic attacks with more or less cyanosis but no convulsive movements.

*Present Condition—Inspection.*—The cardiac impulse is visible over an area extending from the second to the sixth rib, and from the left border of the sternum to one inch outside the nipple line. The upper part of this area seems to rise while the lower is retracted at each beat of the heart, giving a tilting motion to the præcordia. There is slight retraction of the second right interspace at each beat. The whole of the sternum is bulged forwards, the greatest prominence being at the junction of the fifth left cartilage with the sternum, giving a roughly conical appearance.

*Palpation.*—The heart's impulse can be felt over the same area in which it is seen but there is no definite point of maximum intensity (apex beat). Over the first, second, and third left interspaces there is a well marked diastolic thrill, alternate with the impulse.

*Percussion.*—The absolute dulness, wooden in character, extends from the upper border of the third rib above, and from the left border of the sternum to half an inch outside the nipple line, measuring two and three-quarter inches transversely. The relative dulness extends from the first space at the left border of the sternum above, and transversely, at the level of the fourth interspace, from half an inch to the right of the sternum to the midaxillary line, seven inches. The relative dulness is roughly triangular with the apex at the second left cartilage.

*Auscultation.*—The first sound is weak and accompanied by a soft systolic murmur, heard at the fourth interspace just inside the nipple line. The first sound at the aortic cartilage is weak and somewhat roughened; it is not heard at the pulmonary cartilage. The second

sound at the aortic cartilage is faint but at the pulmonary cartilage it is extremely accentuated and sharp. It is followed by a loud, rough, diastolic murmur audible at a short distance from the chest wall, heard all over the cardiac area, but most intense in the second and third spaces about an inch from the sternum. The murmur is propagated towards the left along the first, second, and third interspaces.

*Lungs.*—The right lung is clear in front, the liver dulness beginning at the seventh rib in the nipple line. The left lung is resonant to the base. Behind, the area of pulmonary resonance is normal. The breath sounds are somewhat exaggerated in the right lung. In the left lung behind there is cog-wheel respiration with harsh expiration. There are no adventitious sounds.

I will reserve my opinion of the nature of the case until the members present have had an opportunity of examining it.

[For discussion on this case see page 48.]

## SUDDEN DEATH IN INFANCY AND CHILDHOOD.\*

BY

ALBERT E. VIPOND, M.D.,

Physician to the Montreal Dispensary.

This subject is one of very great importance and one which receives very little attention in text-books on Diseases of Children. The literature on the subject is scanty, but I am pleased to say that Dr. L. Emmet Holt, in his work on Diseases of Infancy and Childhood, has devoted some space to the various causes of sudden death. I am sure that the gentlemen here to-night can call to mind many such cases occurring in their practice. It is imperative for the practitioner to know when and under what conditions sudden death may take place; he must recognise the earliest signs, and thus by proper means he may be in a position to combat it. It is important to know the cause of sudden death in a given case. In the adult, when sudden death takes place, as a rule we have little difficulty in deciding what caused it; probably we have the history of a failing heart, diseased arterial walls producing aneurysm or angina pectoris, or when death takes place from diabetic coma, you will find sugar in the urine, or where the patient died suddenly from uræmic poisoning, albumin and casts will likely be present. If we experience difficulty in deciding what caused death in the adult, the post-mortem examination generally clears it up. In the adult the machinery is at fault and usually lies in one of the vessels or in the heart. In the child it is different; it may be perfectly well one hour and dead the next from spasm of the glottis or from some other cause, and on making a post-mortem examination, we may find nothing to help us. A mother may find her baby dead by her side in the morning; an inquest is held and the verdict is "death due to overlying;" the poor mother is blamed by herself and by others. The result is that she is heart-broken. The question arises: is she to blame? I can safely say that in most instances she is not to blame, for death from overlying is extremely rare, although it is generally supposed to be an extremely common cause of death. As a rule, death in these cases is due to some other cause which has not been suspected, as an enlarged thymus gland, convulsions, etc., and I think that in every such case a post-mortem examination should be made.

Take another instance, a mother may be accused of smothering her child, but most likely it has died from some form of pulmonary congestion. Pulmonary congestion may occur in the illegitimate child shortly

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\* Read before the Montreal Medico-Chirurgical Society, Dec. 14, 1900.



after birth, from exposure, and death may take place in a few hours time. The poor girl is arrested and tried on a charge of murder. On examining the lungs in these cases we may find all the signs of asphyxia, the lungs may be full of froth and also show subpleural hæmorrhages, but in some cases of longer duration, we may find patches of pneumonia. However, the only sure test is to squeeze the lung tissue between the fingers and muco-pus will exude from the divided ends of the bronchi. So you can see how important it is to be well acquainted with the causes of sudden death in infants, from a medico-legal point of view.

In London, Dr. Charles West, in 1854, collected 672 instances in which sudden death took place suddenly. Of these, 236 were in children under one year of age, and only 36 in children from one to five. There may be two reasons why sudden death is more frequent in the infant than in the older child. The first and most important is the great irritability of the nervous system, while, at the same time, the inhibitory power of the cortical centres is slight, and we get convulsions, laryngismus stridulus, and other spasmodic conditions; but as the child develops, this plus irritability becomes less and less, and the minus inhibitory action of the higher centres becomes greater. The next cause is the frequency with which the infant is attacked with pneumonia and other forms of pulmonary congestion. As I said before, as the child grows older its nervous system becomes more stable and is not so liable to shoot off a motor discharge from a slight irritation, and the inhibitory centres are beginning to wake up to their part of the work; so that if a child reaches two years, its chances of dying suddenly are remote.

The causes of sudden death in the child are numerous, and for the most part are the same as in the adult, but sudden death from inhibition and from convulsions and laryngismus stridulus are most frequently found in the child. I found it difficult to decide how to classify the causes of sudden death; I think, perhaps, the best plan to adopt would be to take each system separately, with a last class of the acute specific fevers and the accidental and rare conditions, including death from poisons. I will not do much more than enumerate the causes of sudden death which are common to both the child and the adult, but I will lay special stress on death occurring in diphtheria and other acute exanthemata as well as in convulsions.

(1) *The Nervous System*.—The most common and most important cause is in connection with convulsions. They are responsible for the majority of sudden deaths under the one year of age. They may be due to one of many causes, peripheral irritation playing the most important part. Ninety per cent. of convulsions occurring in children are due to stomach or intestinal irritation. It is common for the acute exanthe-

mata or pneumonia to be ushered in by a convulsion, which may be followed by a scarlet fever or measly rash or you may find a patch of diphtheria on the tonsils. As we all know, the convulsion in the child takes the place of the chill in the adult. Rachitic children are peculiarly liable to have convulsions as well as laryngismus stridulus, facial irritability, tetany, and head-nodding. One convulsion predisposes to another. These children generally inherit a nervous instability. The smile on the sleeping infant's face, which delights the young mother, is often an indication of an overloaded stomach and may be followed by convulsions. Peripheral irritability increases from the fifth to the ninth month. From this age on the centres become more stable.

Sudden death from convulsions is due to asphyxia or heart failure. If after a severe convulsion the child does not rapidly regain consciousness, or where the attacks are frequent, we need not be surprised if we get a fatal ending. Of cases of death in children under ten years of age, 8.5 per cent. are due to convulsions. Death from convulsions is more common in exhausting diseases, such as cholera infantum, marasmus, etc. Convulsions are likely due to an exaltation of the lower nerve centres or, more frequently, to a suspension of the inhibitory power of the higher cerebral centres. In diarrhœa they may be due to anæmia of the brain. They may be caused by toxic elements circulating in the blood or in acute poisoning, as in uræmia. In the health reports of the city of Philadelphia for the ten years from 1876 to 1885, 7,508 deaths occurred in children from convulsions and laryngismus stridulus. In England, in 1886, deaths from convulsions were registered at 27,431, of which number 89.5 per cent. took place in infants under one year of age. We must remember that in many cases the death certificate only mentions the original cause and not the convulsion, so that an examination of death certificates gives us no idea of the number of deaths which are caused by convulsions.

I do not think that a few points on the treatment of convulsions will be out of place here. Empty the lower bowel and, as soon as the child can swallow, give calomel or castor oil. If it cannot swallow, give chloral hydrate per rectum or hypodermically. If the convulsions are repeated, let the child inhale a small amount of chloroform, but, as Dr. George Brown of Montreal pointed out some years ago, it will be necessary to warn the parents that if the child should die under the chloroform, the death will not be due to the drug but to the convulsion. If the convulsion is accompanied by a vasomotor dilatation of the brain vessels, put the child into a warm mustard bath immediately and douche the head with cold water. On the other hand, where you get convulsions in a child suffering from diarrhœa, who has shrunken fontanelles

with anæmia of the brain, wrap the child up in a warm blanket, inject warm saline solution up the colon to fill up his empty vessels, and give brandy and a whiff of amyl nitrite. Your object in this case is not to deplete but to stimulate. I think the treatment of convulsions as a rule is of too routine a character.

Many sudden deaths in children can be ascribed to laryngismus stridulus. It is a common affection and recoveries are numerous. However, an infant who has had one attack is on the brink of a precipice. You can never be sure but that the next attack will end fatally. It is commonly associated with rickets and its other nervous complications. The most common companion is tetany. It is a spasmodic affection of the larynx, causing a sudden arrest of breathing which, if sufficiently prolonged, will cause death from asphyxia. The little patient becomes cyanosed, the fingers are pressed into the palms, and a convulsion may take place. It is a rare condition before six months or after two years. An attack may be brought on by any exciting cause, such as a sudden noise, change of posture, etc., in fact, any sudden impression on the nervous system. You must avoid any reflex irritation, correct the faulty digestion, and treat the rickets. During the attack you can use chloroform or amyl nitrite. Between the attacks treat the rickets. Although death may take place suddenly, you have warning by previous attacks, and you should inform the parents that there is a possibility that death may take place.

There are many other causes connected with the nervous system which do sometimes produce sudden death, as compression or concussion of the brain, fracture of the skull, laceration of or hæmorrhage into the brain substance. There are also various inflammatory conditions of the brain and cord, as cerebro-spinal meningitis, cerebritis, etc., and bulbar paralysis from an ascending degenerative process, although rare in the child, does occur. Or we may have a tumour in the medulla producing bulbar symptoms, or death may take place suddenly from paralysis of the respiratory muscles, or from asphyxia due to food lodging in the air passages. Rupture of an abscess in the brain may produce sudden death. Another well recognised cause is dislocation of the odontoid process of the axis, due to sloughing of the anterior ligament from caries. It may also take place in the advanced stage of pseudo-hypertrophy. It may occur in ordinary epilepsy from asphyxia due to prolonged spasm or to regurgitated food lodging in the air passages. Shock from any cause may produce sudden death.

Inhibition or arrest of function is by no means a rare condition. We are all acquainted with sudden death from slight injury (Brown Sequard). Certain regions are more susceptible than others. The epigastric region



is; for even a slight blow may cause death in a child. The solar plexus blow of the prize fighter is well known to be very effectual. A blow on the hypogastrium or over the larynx may have the same effect. This susceptibility also exists over the region of the fifth nerve. The relation of the stomach and heart exists through the vagus nerve. No doubt the blow causes the vagus to overact and we then get inhibition. Brouardel reports a case where during play a child received a blow on the larynx and death took place immediately.

(2) *The Circulatory System*.—A morbid condition of the heart and vessels is responsible for many sudden deaths in children. Congenital heart disease and foetal endocarditis occur; and you may find several in the same family affected. It is usually found in association with several other congenital malformations, as talipes, imperforate anus, nævoid conditions, etc. There may be no symptoms whatever, but on examining the heart you find a loud murmur over the cardiac area, whose dulness is increased, chiefly over the right heart. On post-mortem examination the lesion is well defined. In many cases you have cyanosis and a bruit is present with, perhaps, clubbing of the finger ends. The cyanosis may only become evident when the child cries, the lips and finger tips becoming bluish. In some cases where we would expect to find extreme cyanosis, as in pulmonary stenosis, we may find none; but a loud murmur is present, with its maximum intensity at the pulmonary region. In many cases the foramen ovale does not close at birth, and may even be found patent in the adult and give rise to no signs or symptoms. You may find no evidence of a patent foramen ovale in the child when it is well, but if it happens to develop some form of pulmonary congestion, cyanosis may come on and a murmur become evident. In this congenital handicapped condition, as well as in any acquired organic lesion, when associated with some intercurrent disease which puts increased pressure on the heart walls, death may take place suddenly.

Foetal endocarditis is rare and is generally due to congenital syphilis, and the child is apt to die when least expected. On making a post-mortem examination, we may find well marked valvulitis with vegetations. Some cases of sudden death supposed to be due to diphtheria, scarlet fever, pneumonia, etc., are really caused by a malformed heart which has been unrecognised. When a child suffers from a congenital malformed condition of the heart he should have special care, he should not enter into exercise which puts too much strain on the heart walls, and should avoid cold, etc.

Any form of cardiac degeneration or inflammation of the heart walls may cause sudden death. Simple fibrous pericarditis, according to Osler,



never kills; but where we get pericarditis with signs of effusion, as dyspnoea with rapid pulse or pulsus paradoxus, and signs of pressure or distension of veins in the neck, irritable cough and dysphagia, the patient is in a dangerous condition and death may take place at any time. In this condition put as little work on the embarrassed heart as possible. The child must have absolute rest; local bleeding by means of leeches is valuable. Counter irritation in the form of blisters to the præcordia, as recommended by Osler, should be tried. If the symptoms are very urgent you may have to resort to surgical means.

Death takes place suddenly from rupture of the heart wall or a pneumo-pericardium due to injuries, but this latter is a rare condition. Acute interstitial myocarditis occurring in connection with the specific fevers, may also cause it. Few children die of heart disease in early childhood, but at the age of puberty they begin to fail. We all know that a severe test is put on the heart muscle at this period, due to rapid growth, etc., and the heart wall dilates. It is important to keep up the nutrition of the child who suffers from cardiac trouble, and especially at puberty. Cases of myocarditis tend to end fatally.

(3) *The Respiratory System*.—In this class of cases sudden death is frequent. It may occur from pneumonia. We all know how frequently it takes place in the infant from bronchopneumonia, and sometimes in the lobar form, but not nearly so frequently as in the adult. Atelectasis, both acquired and in the new-born, may cause sudden death. In the new-born infant with atelectasis, he lies quiet, gets weaker and weaker, and suddenly the vital spark is extinguished. In the acquired form in connection with pneumonia, you must change the child's position from time to time to prevent collapse. Pressure of a large pleural effusion may cause sudden death. The withdrawal of a large amount of fluid suddenly from the chest cavity may produce a fatal syncope.

Asphyxia, which may occur from various conditions, is a most common cause of death. The cause may be extramural, mural or intramural, classified in relation to the trachea and larynx. The most important *extramural* cause and probably the most frequent is an enlarged thymus gland. It is associated with lymphatism, and in this connection is more frequently diagnosed than when it occurs alone. I think that sudden death from an enlarged thymus gland is more frequent than is supposed. At birth the gland weighs about half an ounce. It increases up to two years of age to one and a-half or two ounces. Holt states that the asphyxia is due to pressure on the pneumogastric; Jacobi and others believe it to be due to pressure on the trachea in some cases. I do not think that in the cases that I have seen there was pressure on the trachea. The infant may be in perfect health apparently, and while

eating or drinking throw its head back suddenly and die without cry or movement. In Holt's cases the little patient had asphyxia, followed by convulsions and death in a short time. In other cases the child may previous to death have difficulty in breathing accompanied by a brassy cough and distended veins in the neck and head, and presenting in the lungs signs of a capillary bronchitis but with a normal temperature. You may in a case of this description be able to make a fairly definite diagnosis provided you can exclude other conditions. Dulness may be found over the upper part of the sternum, reaching as low down as the fourth rib. On making your post-mortem examination you find no signs of capillary bronchitis, but the thymus gland may be much enlarged, and Peyer's patches are found to be swollen and raised. These children are generally stout and well nourished, and usually under eight months of age. A case like this has been operated on by König, who removed part of a thymus gland from an infant aged nine weeks who suffered from severe dyspnœa, and recovery was complete.

An enlarged thyroid gland may cause asphyxia and sudden death. For a case of this description Ashby and Wright have divided the isthmus with success. Other causes of sudden death are, pressure of enlarged bronchial glands on the trachea and rupture of a tuberculous abscess into the trachea. Pressure of a new growth is a rarity. Overlying is also rare, and generally happens when the mother is in a drunken stupor.

Of the *intramural* causes, the chief one is swallowing a foreign body or rupture of a retropharyngeal abscess from caries. A polypus of the trachea may also produce a fatal asphyxia. Asphyxia from aspiration of regurgitated food into the air passages does occur, and may be caused by a large firm clot of milk, and generally takes place when the patient is lying on the back.

The *mural* causes are many, the chief one being œdema of the glottis from diphtheria; or even a simple form of laryngitis may cause sudden death. Œdema may be due to swallowing acid or any other caustic. It is fairly common for the child to put its mouth to the spout of the tea kettle, and we get a fatal œdema.

(4) *The Digestive System*.—Sudden death from gastro-enteritis is common, especially taking place in the summer months in infants from one to eighteen months of age. It most frequently occurs in babies which are fed artificially. Sudden death may take place from exhaustion or a toxic condition; as a rule the vomiting is persistent and the stools are small, frequent and foul. The child may die from symptoms resembling uræmic poisoning, and the body is not much wasted. In the other condition, where the child has large, loose, frequent stools and persistent vomiting, the little one appears to actually melt away. The condition

is easily recognised; the collapsed state with sunken eyes, drawn features, and lax limbs, are typical. The symptoms come on rapidly in some cases, in fact they resemble those of an irritant poison very closely; at any rate you are quite safe in using lavage at once. Do not temporize by giving bismuth, etc.; the child's life depends on your activity. The little one's vessels are nearly empty, and a fatal convulsion may take place at any minute, but at the same time you must push your brandy and hot water; but the most important part of your treatment is to irrigate the colon with hot salt water. Wash it out first, and then allow one or two pints to remain in the bowel. It is rapidly absorbed. Your object being to fill up the empty bowel and stimulate the heart, keep the little one warm by wrapping it in a warm blanket. I am sure that my brother and myself have saved many lives by this form of treatment, which we adopt very extensively in our practice. Death may take place suddenly from the onset of the trouble. We are all acquainted with the enormous mortality in infants from diarrhœa, especially in America, and a large number of the cases have a sudden ending.

Sudden death may occur from ulceration of the duodenum or stomach, and yet give rise to no previous symptoms. It may also take place from a hæmorrhage from the stomach, and this is especially seen in the new-born child. I had such a case in my practice some time ago.

Congenital insufficiency of the diaphragm with hernia of a part or nearly all of the abdominal contents into the thoracic cavity, may cause sudden death. It may also take place from strangulated hernia or from perforation of the intestine either typhoid or tuberculous.

(5) *Infectious Diseases*.—Sudden death is common in diphtheria and malignant scarlet fever. In the former, it may take place from paralysis or involvement of the heart. The paralysis generally comes on during convalescence, during the third and fifth weeks. It is just as common for it to follow a slight attack as a severe one. The patient may be convalescent, when he develops paralysis of one of the external ocular muscles, or the first thing noticed may be a nasal tone of voice, and, on drinking, the liquids may come through his nostrils, pointing to paralysis of the soft palate. The first sign of paralysis may be an increase of the patellar reflex, which should be looked for before the child is allowed to get up (Great Ormond Street Hospital). If this takes place, make your patient lie perfectly quiet and give strychnine. Examine the chest and abdomen carefully from time to time, to notice the first sign of intercostal or diaphragmatic paralysis. The patient may experience no discomfort from paralysis of the diaphragm alone, or the intercostals alone. Unless you examine carefully, you may be surprised to see the child go off suddenly. The signs are typical; the non-move-



ment of the chest wall when the intercostals are paralysed, and the retraction of the abdominal wall on inspiration with pushing out of the abdomen on expiration, where the diaphragm is paralysed. The child has a weak plaintive cry, nasal in character, the respirations are slow and embarrassed, and he lies listlessly unable to move. The chest is full of mucus, which he is unable to cough up. Death usually follows this condition in from one to two hours time. As a rule we get a sub-normal temperature and a cold sweat covers the body, but we may get a high temperature just before death. It is a picture which is not easily forgotten.

Another cause of death in diphtheria is cardiac failure. It is due to degeneration of the heart muscle in most cases without any involvement of the valves or pericardium. It may take place without symptoms of nerve paralysis. In most severe cases the pulse becomes feeble and rapid, at times the heart is irregular and intermittent with a gallop rhythm, or it may be abnormally slow. It generally occurs during convalescence. The patient may be sitting up in bed playing with his toys, when he suddenly utters a cry and death takes place immediately. In other cases there is pallor, vomiting, and dyspnoea on the least exertion. On examining the heart you find the mitral first sound is short and the pulmonary second sound has become loud. Sudden cardiac syncope is apt to take place. Thus a rapid irregular heart during convalescence, with dyspnoea, frequent vomiting, and a slow or rapid pulse, are signs of great gravity. In every case of diphtheria it is important to keep the child prone. The throat should be cleaned while he is on his side; he should not be allowed to get up too soon, even in the milder forms. An examination of the heart should be made at each visit; watch carefully the position of the apex beat, the character of the mitral first sound and of the pulmonary second.

Death may take place suddenly in malignant scarlet fever. My brother, Dr. Charles W. Vipond, was called to see such a case in which death took place within twenty-four hours from the time of onset. Ashby and Wright report another such case. Death is caused by heart failure due to the intensity of the poison. Death may also take place three or four days after the first symptoms appear. Some months ago I was called to see a child who suffered from scarlet fever. At my second visit she was apparently doing fairly well, but next day she died suddenly, from heart failure probably. The sudden deaths which take place in scarlet fever in the late stage are usually due to uræmia. Death is due to the plus pressure put on the already malnourished cardiac muscle from the enlarged kidneys.

Sudden death may take place in typhoid fever from parenchymatous



degeneration of the heart muscle, intestinal hæmorrhage, or perforation of the intestine. It may take place in whooping-cough from spasm of the glottis or from swallowing the tongue in young infants.

(6) *Accidental and Rare Conditions* including death from *poisons*. The accidental cases are many. Hæmorrhage from different parts of the body especially from removal of tonsils, also division of a large vessel, sunstroke, gunshot wounds, excessive cold, etc.

Fat embolism may cause sudden death. It occurs in connection with fracture and it is believed by Brouardel that the emboli may be formed by colonies of putrefactive organisms. The various poisons may cause sudden death, especially hydrocyanic acid and inhalation of chloroform, but this is extremely rare in the child. A rare condition is hæmorrhage in the suprarenal capsule occurring in the apparently healthy child. Asthenia is a cause of sudden death; life goes out for want of nervous power to keep the vital functions in activity. Death may be due to prolonged labour, prolapse of funis during delivery, from forceps injury, or from hæmorrhage of the cord shortly after birth.

Retro-œsophageal abscess is a rare cause of sudden death. It is due to caries of the spine. The child dies from asphyxia due to pressure on the vagus nerve. We can get no symptoms or, on the other hand, symptoms of irritation of the vagus nerve or of the recurrent laryngeal, may be present, as stridulous breathing, spasmodic cough, and inspiratory dyspnœa. He suddenly gets asphyxia and death follows rapidly. It is most difficult to diagnose this condition, as the symptoms are usually mistaken for those of a foreign body, enlarged bronchial glands, etc. Examine the spine carefully in these cases.

In closing, we might summarise and say that the five main causes of sudden death in infants and children are: convulsions, including laryngismus stridulus, asphyxia, pulmonary congestion, syncope, and intestinal troubles.

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# RETROSPECT OF CURRENT LITERATURE.

## Medicine.

UNDER THE CHARGE OF JAMES STEWART.

### **Venous Thrombosis in Cardiac Diseases.**

WILLIAM H. WELCH. "Venous Thrombosis in Cardiac Disease.  
*Transactions of the Association of Amer. Physicians, Vol. XV.,*  
1900.

In the preamble to this very interesting article, Prof. Welch remarks on the frequency with which venous thrombosis is associated with infectious and chronic wasting diseases. On the other hand, references in medical literature to venous thrombosis in diseases of the heart are singularly rare, and no particular attention has been called to this complication, either in text-books on these diseases or in special monographs. Most of the cases reported are found in French medical literature. There are certain peculiarities of the venous thrombosis of heart disease which render the subject worthy of investigation. Here follow the histories of five illustrative cases, four from Prof. Osler's clinic, and one from the service of Dr. Herrick of Chicago. The lesions in case i, were aortic and mitral insufficiency with adherent pericardium, thrombosis of left innominate, jugular, subclavian, and axillary veins; in case ii, mitral stenosis, thrombosis of left jugular, axillary, subclavian, and innominate veins, and embolism of left popliteal artery; in case iii, mitral and aortic insufficiency, thrombosis of left femoral vein; in case iv, arterio-sclerosis, mitral and tricuspid insufficiency, fibrous myocarditis and fatty heart, thrombosis of left internal jugular, subclavian, axillary and brachial veins.

In reviewing the literature Welch has been able to collect twenty-three cases. He does not, however, consider this to be a complete category. The most remarkable feature of venous thrombosis in heart disease is the location of the thrombi; twenty-four were thromboses of veins conveying blood from the upper extremities or the neck, or both, mostly of the left side, and only four were thromboses of the veins supplying the lower extremities. Though, owing to the greater oedema of the lower

extremities, it is possible that lower extremity thrombosis may have been overlooked, it is not probable that it is at all frequent, even allowing for an increased ratio of lower extremity thrombosis as a result of a more thorough search in cases of heart disease. The relatively large percentage of upper extremity thromboses in cardiac diseases is most remarkable, when compared with the ratio of upper and lower extremity thromboses in other diseases, Bouchard's estimate of the latter being one to fifty.

From Professor Welch's analysis of the twenty-four cases of upper extremity thrombosis, which constitute a separate and distinct group characterized by special features, the following important features may be selected:—Females 171, males 51, sex not stated 2. The valve most commonly affected was the mitral, and the most frequent lesion, mitral stenosis. Acute articular rheumatism was an antecedent in a little more than half of the cases. The thrombosis as a rule occurred during a period of extreme failure of compensation. The thrombi were in the veins of the left side in 22 out of 24 cases, in both sides in 7 cases, in the left side alone in 15 cases, in the right side alone in 2 cases. The commonest starting point for the thrombus was the lowest part of the left internal jugular (bulb), or the left internal jugular and left innominate vein, or subclavian vein near the entrance of the jugulars. The thrombi were mixed, the prevailing colour being dark red; and they were mostly solid, occasionally centrally softened. Bacteria were looked for in three cases only and found in only one (Welch, case i), the organisms here being streptococcus pyogenes. In two cases only was phlebo-sclerosis noted as antedating the thrombosis, evidenced by pain, tenderness, œdema, the presence of hard sensitive venous cords, and distension of superficial veins.

The explanation of the causation of these upper extremity thromboses cannot be found satisfactorily in assuming that they are due to cardiac cachexia with circulatory disturbances, or to some alteration in the chemical composition of the blood, as is advanced by some of the French writers. Hanot and Parmentier explain the preference for the left side by the greater length and obliquity of the left innominate vein, which make the return of blood more difficult than from the right side, especially in the venous congestion of uncompensated cardiac disease. Hirschloff suggests an additional factor in the greater frequency of imperfect development and insufficiency of the valve near the junction of the internal jugular and subclavian veins on the left than on the right side. Welch adds to these causes pressure on the left subclavian vein from the dilated auricle and dilated large pulmonary vessels. The valves in the lower ends of the jugulars explain the usual starting point of the

thrombi (Peter). Eddying or whirling motion of the blood may readily be set up in this situation in heart disease, and this eddying is of great importance in determining the localisation of thrombi in general (Von Recklinghausen). Tricuspid insufficiency with systolic reflux of blood into the veins, would still further favor the formation of thrombi in this situation. These factors, however, explain only why certain veins are the seat of election for the thrombi, and the conditions described most frequently exist in heart disease, yet venous thrombosis is not a common occurrence in such cases. It seems probable that the thrombi are ultimately due to bacterial infection. In one case (Welch), bacteria were demonstrated in the thrombus. Cultures are necessary to exclude the presence of bacteria. Out of forty-four peripheral venous thrombi of the marantic type (not in cardiac cases), thirty-four contained bacteria (Harris and Loncope, in Prof. Welch's laboratory). Moreover terminal infections are not uncommon in heart disease, and the histories and autopsies of many of the twenty-four cases under consideration, revealed some infectious process, usually in the lungs, such as bronchitis, pneumonia, and pleurisy. (In the discussion that followed the reading of this paper several similar cases were described).

LOUIS GALLAVARDIN. "Des Thromboses veineuses au cours des cardiopathies." *Gazette des hôpitaux*, November 3, 1900.

This is such a remarkable *replica* of Prof. Welch's article that it is unnecessary to more than point out that conclusions are identical with those of the American writer, whose work Mons. Gallarvardin has evidently not read or heard of. He has, however, failed to attribute to the dilated left auricle and pulmonary vessels the important part in the production of the thrombus which Welch suggests. In other respects the parallelism between the two articles is most striking.

H. A. Lafleur.



## Gynaecology.

UNDER THE CHARGE OF WILLIAM GARDNER.

### **Recto-Vaginal Carcinoma.**

SNOW, HERBERT, M.D. "Two Cases of Recto-Vaginal Excision for High Rectal Cancer." *Brit. Gyn. Jour.*, August, 1900.

The first patient was 57 years of age, and had given birth to three full term children. She was well nourished but had felt rectal pains for about one year although "the bowel was infiltrated as far as the finger could reach," the upper margin could be felt and the whole mass was freely movable. The infiltration was hard and brawny. The whole growth with the rectovaginal septum was removed, the pouch of Douglas was opened, but subsequently closed again by catgut, and the divided end of the rectum was sutured to the skin. After cicatrization of the part, a vulcanite plug was worn by the patient, the cervix uteri being at the apex of the triangular fossa.

The second patient was also 57 years of age, but had never been pregnant. Here also the upper limit of the disease could be reached per vaginam and the bowel was movable. At operation the labia minora and whole lateral and posterior walls of the vagina to within one-quarter of an inch of the uterus, together with the diseased part of the rectum, were removed, as well as a strip of infiltrated tissue which extended out into the left broad ligament. The rectal mucous membrane was sewed to the skin posteriorly, the anterior cavity was packed with gauze, and a catheter was inserted.

The writer holds that so long as the bowel is mobile one should try to extirpate the cancerous disease of the rectum and vagina even if the upper parts of the rectum are involved. He has never seen a case of operable rectal cancer when the disease could not be removed by the above method and does not advocate the operations of Kraske, Madebung, etc.

### **Angiotribe versus Ligature.**

MONTGOMERY, E.E., M.D. "The Consideration of the Methods of Hæmostasis in Abdominal Surgery." *Amer. Gyn. and Obstet. Jour.*, October, 1900.

In this article a short review of the evolution of the means of controlling hæmorrhage in abdominal surgery is given.

Twenty years ago, Wells, Peaslee, and Atlee were using the clamp, Tait, the ligature, and Keith the hot iron. In recent years the ligature

has been the most popular means of arresting hæmorrhage, and almost every variety of material has been used. The greatest difficulty was experienced in operations upon the uterus but was overcome to some extent by the adoption of the shoemaker stitch. Here, however, the stump when dropped back into the peritoneal cavity was apt to slough. While advocating the use of the ligature for ovarian pedicles, Tait and his followers used the clamp for uterine operations, bringing the stump out of the lower end of the wound, where it was held by pins, which pierced the tissue at right angles to each other, and rested on the patient's abdomen. Later, Goffe, and Mary A. Dixon-Jones tied the uterine artery on each side of the pedicle, which they dropped back into the abdomen after covering it with peritoneum. Here the ligatures were placed in non-elastic tissue, marking a distinct advance, but it was found that these ligatures now and again caused abscess formation, and some means which would enable one to do away with them was sought. It had long been recognised that crushing was sufficient to prevent bleeding from small vessels and, acting on this known fact, Doyen and Tuffier perfected instruments of sufficient power to crush the larger vessels. The instrument was allowed to remain on the tissues for from half to one minute, after which the structures on the distal side were divided. It has been found, however, that this method is rather uncertain, and now operators who use the angiotribe pass a ligature around the tissues which have been crushed, the trough thus formed preventing the ligature from slipping.

### **Diagnosis of Ectopic Pregnancy.**

BALDWIN, J.F., M.D. "The Diagnosis of Ectopic Pregnancy before Rupture, based on eleven cases." *The Virginia Med. Semi-Monthly*, September, 21, 1900.

Our real practical knowledge of ectopic gestation only dates back about twenty-five years, patients who died from this affection previous to that were said to have suffered from pelvic hæmatocele. Our knowledge upon this subject has so increased of late years that now almost every medical man of any experience should always be able to diagnose a case of ruptured ectopic gestation, and even to suspect the presence of an extra-uterine gestation in many instances before rupture.

While there are no pathognomonic signs and symptoms of ectopic gestation, one should always be on one's guard where there is a complaint of menstrual irregularity, especially where one or two periods have been missed and then followed by a constant dribbling of blood from the uterus. Pelvic examination will here reveal the presence of an elongated tumor on one side of the uterus, as well as a soft cervix and probably a slightly enlarged uterus, which will frequently be pushed to

one side. Where a patient has the above symptoms, a pelvic examination should always be made.

"The physician who without making any examination tells the middle-aged women who came to him complaining of irregular hæmorrhages that they are merely having the change of life, will not likely make an early diagnosis of cancer of the uterus; and he will probably tell patients who come to him with symptoms of an ectopic pregnancy that they are merely threatened with a miscarriage." Other conditions may give rise to the same signs and symptoms, such as tubal and ovarian disease, but they all call for operation.

The writer reports five cases in which he diagnosed and operated for ectopic gestation, one patient having the other side affected three months after removal of the first foetus and sac.

### **Puerperal Septicæmia.**

MACHARG, W. E., M.D. "An Analytical Account of Fifty-Seven Cases of Puerperal Infection. *Brit. Med. Jour.*, Feb. 17, 1900.

In this article Macharg gives very full details of fifty-seven cases of puerperal infection which had been under his care. Of this number, 31 terminated fatally, while 25 recovered. In 8 cases, 6 of which were primiparæ, instruments had been used, and three were complicated by hæmorrhage. Well marked traumatisms were present in 17 cases, in 9 of which they were severe, the rectum being involved in three. In 67 per cent. the disease first manifested itself during the first four days post partum, in 5 cases after the seventh day, and in one case, which was fatal, not until the fifteenth day. In one case the disease lasted 40 days, and another for 73 days before ending fatally, but both of these patients had chronic nephritis, which may have been answerable for the fatal result.

The pathological conditions found in the 21 patients upon whom post mortem examinations were made were, diphtheritic endometritis, salpingitis, oöphoritis, peritonitis, septic thrombosis of the uterine sinuses and large veins, and parametritis. In 8 cases, one or both tubes contained pus (this evidently being present before pregnancy in one case) and pelvic peritonitis was present. This latter, in two cases, was caused by abscesses in the uterine wall, due to septic thrombi in sinuses. In 13 cases in which there was thrombosis of the uterine sinuses or veins, metastatic deposits occurred in the kidneys, lungs, liver and spleen in the order named. Pelvic cellulitis only accompanied traumatism of the genitals four times.

In the cases which recovered the most frequent complications were phlegmasia (3), gluteal abscess (2), and septic arthritis of one or both

knees (2). It is noteworthy that in the cases of gluteal abscess no connection between it and the interior of the pelvis could be made out. Where bacterial examination was made the chief infective organisms found were streptococcus pyogenes aureus and the bacillus coli.

The writer gives more detail in the diagnosis of the complications than of the disease itself.

The treatment adopted was the administration of two antiseptic intra-uterine douches daily, and draining the uterine cavity by loosely packed strips of iodoform gauze. Complications were treated as they arose. In some cases twenty grains of quinine were given every twenty-four hours, but the results obtained were not encouraging. In the earlier cases the uterine cavity was curetted, but this practice was given up except where there were retained products of conception as it was frequently followed by rigors and pyrexia.

Antistreptococcic serum in doses of from ten to thirty c.cm. repeated in twelve hours, was used on several occasions, but produced practically no results upon the course of the disease.

The author concluded from a study of these cases that any real advance in the treatment of puerperal septicæmia must lie in the way of surgical interference.

*F. A. L. Lockhart.*



## Obstetrics.

UNDER THE CHARGE OF WILLIAM GARDNER.

### Childbed Mortality.

R. MILNE MURRAY. "Childbed Mortality. *British Medical Journal*  
*Nov. 24, 1900.*

Dr. R. Milne Murray, in his presidential address, at the opening of the sixty-second session of the Edinburgh Obstetrical Society, discusses the question of childbed mortality. The figures he quotes, showing the condition of affairs in the British Isles, are certainly startling. In his address he referred to the three epoch-making contributions, for which the nineteenth century would ever be famous, as being Mæjcle's work on the mechanism of labor, Simpson's discovery of anæsthesia, and Lister's work on antiseptics. He then drew attention to the fact that, in spite of all that is claimed for modern midwifery, 5000 women perish in childbed annually in Great Britain. Entering the new century, it is the first duty of obstetricians to discover and remove the cause of this lamentable condition of affairs.

That deaths from puerperal fever were increasing during the last forty or fifty years was undoubtedly as true as it was appalling. The facts in this connection he tabulates as follows:—

Mortality from Puerperal Fever in England and Wales:

|                                                             | Mean deaths<br>per thousand. |
|-------------------------------------------------------------|------------------------------|
| 1847 to 1856. Early anæsthesia, no antiseptics . . . .      | 1.89                         |
| 1875 to 1884. Anæsthesia general, early antiseptics . . . . | 2.28                         |
| 1886 to 1889. Anæsthesia general, antiseptics general . .   | 2.46                         |

In Scotland, far more labours were attended by medical men in proportion to midwives than was the case in the middle of the century, yet the following table is quoted to show how the matter stands in that portion of the island.

#### Childbed Mortality in Scotland.

|            | Accidents of<br>childbed. | Puerperal<br>fever. | Total. |
|------------|---------------------------|---------------------|--------|
| 1897 ..... | 331                       | 205                 | 536    |
| 1898 ..... | 351                       | 227                 | 578    |

He points out that had the increase for 1898 been proportional to the

increase of population, it would have been 4 instead of 42 as the figures quoted show.

He then refers to the fact that in maternity hospitals mortality has been reduced to the "irreducible minimum" through the use of anæsthetics and antiseptics principally. He considers that the midwife is not to be blamed for this sad condition, but that the source is probably complex. Dr. Milne Murray considered that an explanation of the material mortality from 1827 onwards would be found in the misuse of anæsthesia, and secondly, in the ridiculous parody which, in the hands of many practitioners, stood for the use of antiseptics.

Before the days of anæsthesia, forceps and turning were only employed when the maternal efforts failed, as such interference only increased the conscious suffering of the patient. When anæsthesia became possible, interference became on that account more frequent, and operations were undertaken when really unnecessary, thus increasing the dangers and complications of labour. With the introduction of antiseptics, the dangers of early interference were apparently mitigated, but when one heard of men who admitted that forceps cases represented from 30 to 70 per cent. of their practice, one wondered what the antiseptic precautions were which they claimed as their justification.

Normal labour being a natural process was best left to itself. The moment we interfered it became a complex and dangerous process, and it was chiefly because this was being constantly ignored, that the death rate of childbed was what it was to-day.

Until the obstetrician brought with him to the labour room all that was possible of the principles of antiseptic surgery, which had been at the bottom of the triumphs of modern gynæcology, we should have to wait for the lightening of the dark cloud which hung over modern midwifery.

### **The Indications for Operative Procedure in Contracted Pelvis.**

J. WHITBRIDGE WILLIAMS. "The Indications for the Employment of Cæsarean Section, Symphysiotomy, and Craniotomy in Contracted Pelvis." *Richmond Journal of Practice*, September, 1900.

Recent statistics show that the mortality of Cæsarean section, when performed upon uninfected cases by competent operators, is less than five per cent. When performed on infected cases, the results are disastrous.

Pinard, the most enthusiastic advocate of symphysiotomy in France, has recently reported 100 consecutive cases of symphysiotomy with twelve maternal deaths. Removing from the number the cases profoundly infected before operation, the corrected mortality would be

about five per cent. Bar collected statistics from 149 cases of symphysiotomy in the hands of four skilfull operators and found a maternal mortality of 6.7 per cent.

Convalescence seems to be more rapid after Cæsarean section than after symphysiotomy, patients being able to walk on the average three weeks after undergoing the former operation, while after the latter, on the average, thirteen weeks elapsed before they could walk with any degree of comfort. The ability to walk after symphysiotomy is directly proportionate to the degree of pelvic contraction, those having least pelvic deformity being able to walk soonest. After Cæsarean section women could return to hard work in four or five weeks, but not until four or five months after symphysiotomy.

Pinard reports the foetal mortality after symphysiotomy at 13 per cent., and Bar at 9.39 per cent. The infant mortality after the Cæsarean operation is practically nil, a point greatly in favor of this operation. In view of the good results following Cæsarean section, he thinks the former indication of a conjugate vera not over  $5\frac{1}{2}$  c.m. should be extended to  $6\frac{1}{2}$  c.m., provided the child is alive. When the conjugate vera is 7 c.m., it is advisable to allow the patient to go into labor and, if the head rapidly molds, spontaneous delivery may occur, but when the head shows no signs of descending, Cæsarean section should be performed without attempting to deliver.

Williams is of the opinion that where a woman is infected or is so situated that no one is at hand competent to perform Cæsarean section, craniotomy upon the living child is justifiable.

With regard to the induction of premature labour in women with contracted pelvis, he considers that, in order to be efficacious, it must be performed six to eight weeks before the date of the expected confinement. Pinard and Charles report a foetal mortality of 33 and 36 per cent. respectively.

He closes his paper by dwelling on the necessity of skill, good surroundings, and a non-infected patient, in contemplating a Cæsarean section.

### **The Role of the Liver in Eclampsia.**

W. A. NEWMAN DORLAND. "The Role of the liver in the Production of Eclampsia." *Amer. Jour. of Obstetrics*, September, 1900.

Dorland reviews in this paper the theory of autointoxication that is now steadily gaining ground as the probable etiology of puerperal eclampsia. The tendency to-day is to ascribe the convulsive seizures and the albuminuria to one and the same cause, the presence in the blood of a certain toxin or it may be, certain toxins of unknown consti-

tution and undertermined origin. The constancy of hepatic lesions, necrotic and hæmorrhagic, that has been noted in autopsies upon eclamptic women, has inclined the consensus of opinion towards the view that the liver is the probable laboratory whence the poison or poisons are engendered. The organism is constantly engaged in a fight against a toxicosis. It has two sets of organs for its defense, namely, the metabolic organs, those whose function is to arrest and transform the toxic principles (intestines, spleen, lymphatic glands, suprarenal capsules, thyroid gland and liver), and the eliminating organs (the intestines, skin, lungs, and kidneys.)

The liver is called upon to play a triple rôle, to collect certain toxic principles in order to turn them gradually into the blood, or to excrete them with the bile; to transform other foreign poisons in a similar manner; and through the antiseptic properties of the bile, to modify the intensity of intestinal fermentation.

He draws attention to the fact that pregnancy predisposes to an autointoxication, as it is characterised by a marked increase in the waste products of the body, and an increase in the production of leucomaines. In verification of this he points to the increased toxicity of the urine of healthy women during pregnancy. The metabolites of both mother and fœtus must be discharged through this channel, and, owing to the hydræmia incident to pregnancy, the work of the lungs and the heart is increased. During pregnancy there is also an increased tendency to constipation with dyspepsia and intestinal fermentation. As long as the kidneys can do so, they dispose of the morbid products from the bowel also, and thus still further add to the toxicity of the urine. From this excess of duty, these organs are apt to succumb and cease to eliminate the toxic principles. He agrees with Pinard, that the kidney has only a secondary relation to eclampsia, and the albuminuria is a sign of hepatic insufficiency. He considers that a sedentary life, a warm climate, tight lacing and arthritism are some of the predisposing causes of hepatic inadequacy.

He considers that the theory of hepatic origin of puerperal eclampsia will afford explanation for those fulgurant cases not accompanied by albuminuria, and will also open up a new field in the study of the grave affections of pregnancy hitherto but little understood, especially acute yellow atrophy of the liver and puerperal mania. Acetone is likely to find its way into the blood as the result of rapid katabolism, and it is probable that this substance is at least one of the exciting morbid agents. He states that "it may be concluded, therefore, that when the fœtus and woman send an excess of waste products to the mother's liver, there occurs an acute inflammation and degeneration of the hepatic cells



with an accompanying retention of materials that quickly undergo retrograde processes and break up into toxins, among them being acetone and the other eclamptic poisons. The relation of acetone to metabolism is so important that the urine of pregnant women should be systematically examined for it."

He points out that the index to the liability of women to eclampsia is the daily quantity of the urine excreted, and the relative proportion of solids contained in this total amount. If the percentage of urea in the urine is high, there is probably not a great accumulation of poisons in the blood.

### **A Cause of Error in the Diagnosis of Ectopic Gestation.**

PAUL BAR. "Sur une forme irrégulière de l'utérus peuvent devenir une cause d'erreur dans le diagnostic de la grossesse intra-utérine à son début." *Bulletin de la Soc. d'Obstetr. de Paris*, No. 7, 1900.

Bar directs attention in this communication to the fact that not uncommonly at the beginning of pregnancy the uterus undergoes an asymmetrical enlargement. One cornua develops excessively and becomes softer than the main body of the uterus. In such cases, by bimanual examination, the body of the uterus is to be found somewhat enlarged and fairly hard. To one side, the border of the uterus can be distinctly outlined, while on the other side, the border is less distinct, the uterus appearing to be flanked by a tumour having a somewhat softer consistency than that of the body. Between the soft tumour flanking the uterus and the body of the organ, a more or less distinct groove can usually be distinguished. In these cases the soft zone corresponding to the inferior segment is absent, and the body of the uterus is of the same consistence from fundus to cervix. In these cases, when examined at a later date, the uterus is usually found to have assumed its regular form, the body having its regular contour and being separated from the cervix by the usual soft zone.

Bar quotes three illustrative cases and gives outline drawings of the conditions present; all three went to full term. Vineberg, in 1895, drew attention to the difficulty of differential diagnosis between irregular development of the gravid uterus and ectopic gestation.

With regard to the cause of this condition, Bar does not agree with Vineberg in attributing it to any early metritis interfering with the development of the uterus. He attributes the condition to the attachment of the ovum in one of the uterine cornua, not far from the ostium tubæ. He considers that this point of attachment for the ovum cannot be rare, judging from the frequency of irregular development of the uterus at the beginning of pregnancy. In his hospital service, scarcely a month passes without a case of this kind being observed.

The condition is very transient. He has noted the persistence to the fourth month of pregnancy in only one instance. It is usually to be observed in the course of the second month. When found, the condition is not of a serious import, its principal interest being the errors of diagnosis to which it may give rise. With regard to these, he mentions the possibility of mistaking the hard body of the uterus for a fibroma. This condition may possibly explain those cases where, after a diagnosis of a para-uterine tumour, the abdomen has been opened only to discover the presence of an intra-uterine pregnancy.

This condition can readily be confounded with an ectopic gestation, especially in the absence of symptoms before rupture. The points of importance in the differential diagnosis of these conditions he states as follows:—"The confusion with tubal pregnancy may possibly be eliminated by noticing the position of the round ligament, which in tubal pregnancy is to the inner side of the tumour: in making out that the groove of separation between the uterus and the tubal tumour does not exist, at least as marked, between the mass formed by the pregnant horn and the uterine body; in locating the situation of the tubal tumour, which is generally behind the uterus, whereas the pregnant horn is very elevated and situated on the side of the empty part of the uterine body."

## Reviews and Notices of Books.

A BOOK OF DETACHABLE DIET LISTS AND SICK-ROOM DIETARY. By JEROME B. THOMAS, JR., A.B., M.D. Published by W. B. Saunders, Philadelphia.

This little work contains diet lists for all the more important diseases. We have, on many occasions, made use of them. They are conveniently printed, and are to be recommended to the practitioner, as both an assistance to the memory, and a saving in time.

CONTRIBUTIONS FROM THE WILLIAM PEPPER LABORATORY OF CLINICAL MEDICINE, UNIVERSITY OF PENNSYLVANIA.

This very beautiful memorial volume contains many important papers; among the most valuable of which we note two by W. G. Spiller, one on muscular dystrophy and the other on amyotrophic lateral sclerosis. Dr. A. E. Taylor has an exhaustive paper on studies in leukæmia. Dr. Edsall contributes a paper on the influence of immoderate drinking of water upon metabolism and absorption; and Dr. Walsh details some interesting investigations on the etiology of pertussis. The volume reflects the highest credit upon this research laboratory, from which many previous papers have already appeared. *A. D. B.*

HEART DISEASE IN CHILDHOOD, AND IN YOUTH. By CHARLES W. CHAPMAN, M.D., M.R.C.P., London; with an introduction by Sir Samuel Wilkes, Bart., M.D., F.R.S. The Medical Publishing Co., Ltd., London.

Dr. Chapman, who has been for many years much interested in the study of cardiac diseases in children, gives us, in the present volume, his opinion in regard to the prognosis and medical treatment of heart disease in infancy and childhood.

Dr. Chapman strongly advises that in children who have suffered from an attack of rheumatic fever, the heart should be examined at intervals for a year, at least, after the attack has subsided, in order to determine the exact amount of injury which has taken place, and the amount of exercise that may be gradually permitted. The absence of a murmur, he says, during, or soon after a rheumatic attack, is no guarantee that the heart has escaped injury since the auscultatory symptoms of valvular disease may not be in evidence until some weeks have elapsed. The

effects of a pericardial adhesion also are not immediately apparent, and mitral stenosis, for the most part a consequence of endocarditis, with subsequent adhesion and contraction of the inflamed membrane only gradually manifests itself. In the after treatment of the case, he warns against permitting any exercises requiring fixation of the chest, such as rowing, but he permits bicycling in the less serious cases.

We regret that the author does not sufficiently insist on the great value, in our opinion, of complete rest for many weeks after an attack of endocarditis in children. Repair takes place slowly in these cases; and we feel a far greater amount of repair will take place under complete rest, than even under gentle exercise. Exercises, in our opinion, should not be commenced until many months, Holt insists upon a year, after the acute symptoms have passed off.

*A. D. B.*

**THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY.**—A New and Complete Dictionary of the Terms Used in Medicine Surgery, Dentistry, Pharmacy, Chemistry, &c., with their Pronunciation, Derivation, and Definition, Including much Collateral Information of an Encyclopedic Character. By W. A. NEWMAN DORLAND, A.M., M.D. With numerous illustrations and 24 colored plates. W. B. Saunders & Co., Philadelphia and London, 1900. Canadian Agents, J. A. Carveth & Co., Toronto.

We have examined, with much pleasure, this new dictionary. Its size and general get-up make it particularly useful and convenient. The definitions are satisfactory. The various tables, and the accompanying illustrations will, we are sure, prove of much value both to students and physicians.

We have much pleasure in recommending the work as one of the most useful and convenient of its class that we have yet seen.

*A. D. B.*



## Society Proceedings.

### MONTREAL MEDICO-CHIRURGICAL SOCIETY.

*Stated Meeting, November 16, 1900.*

JAMES PERRIGO, M.D., PRESIDENT IN THE CHAIR.

Drs. R. W. Mitchell and E. S. Harding, were elected ordinary members.

#### **Harelip with Advanced Premaxilla in an Adult.**

DR. G. E. ARMSTRONG presented this case before the society.

#### **A Cardiac Condition for Diagnosis.**

DR. G. GORDON CAMPBELL introduced a girl thirteen years of age with a puzzling group of physical signs in connection with the heart. See page 20.

DR. A. D. BLACKADER considered the remarkable points about this case were the apparent enlargement of the heart upwards towards the left clavicle as evidenced by the dull percussion note, the loud diastolic murmur heard as clearly in the first as in the second interspace and accompanied by a thrill, and the loud and ringing character of the pulmonary second sound. It seemed to him that in pulmonary stenosis, the most common lesion in congenital affections of the heart, a weak second sound was generally met with owing to the necessarily low tension in the pulmonary arteries, and in the few cases where an accentuated pulmonary second sound was met with, the tension was raised by some abnormal patency of the ductus arteriosus. Here, the second sound was loud. The speaker did not think he had ever heard an aortic second sound with a more ringing quality than this had, and in his opinion it must indicate great tension in the pulmonary circulation. It seemed to him questionable whether the lesion in the lung was alone sufficient to cause this increased pressure. If so, the stenosis must necessarily be slight, the regurgitation great, and the trouble in the lungs very extensive. If this was a congenital lesion there probably existed thickening of the pulmonary valves and patency of the ductus arteriosus and, perhaps, of the interventricular septa. With reference to cyanosis, it was generally recognized that cyanosis in a child was an accompaniment of pulmonary stenosis but it was not invariably so, for in a series of cases collected by Dr. Crozer Griffith in only 85 per cent. of the cases in which stenosis existed had cyanosis been present during life.

DR. HAMILTON thought it was almost impossible to tell what one was dealing with. Dr. Campbell's statement that the patient was an-

æmic when first seen, and that she had scarcely ever seemed to be cyanotic was a point against patency of the foramen ovale. A third point was the absence of any clubbing of the fingers. Taking this view of it, we would have to do here with aortic stenosis and regurgitation. In corroboration of this view, first, a presystolic murmur had been heard at different times and was now absent, secondly, the very much weakened first sound at the apex, thirdly, the size of the heart and the direction in which the increase had taken place corresponded more to an aortic lesion than to any congenital condition that we are at all conversant with. Then again the sharp accentuation of the pulmonary second sound was strongly in favour of some condition not associated at all with the pulmonary valve. If there was stenosis beyond the valve it would bring about besides this accentuation of the second sound, dilatation of the heart to the right. The small pulse might be explained by aortic stenosis as well as insufficiency. The position of the heart was rather to the left and the question whether this is not partly due to deformity of the chest had to be considered.

DR. LAFLEUR thought it would add to the interest to suggest another diagnosis of the condition. His opinion, based it was true on a superficial examination, was that the child had got an adherent mediastino-pericarditis. There was no condition in childhood which gave rise to such large hearts and it, moreover, gave rise to murmurs of every possible variety, and chiefly about the area of the pulmonary artery. He did not attempt to explain all the murmurs present, but the case made one think of mediastino-pericarditis.

DR. J. G. ADAMI was pleased to see Dr. Lafleur referring to this condition of adherent mediastino-pericarditis. He had seen a case in Dr. Steele's wards in Manchester of a similar nature, which came to post-mortem and proved to be indurative mediastinal pericarditis. In this case—it was in a child—there had been a coincident extensive pleurisy especially affecting the apices of both lungs but more on the left side. The result had been that, with this generalised adhesive pericarditis and the contraction of the old pleurisy, the heart had been pulled to one side, and the murmurs present had been apparently due to alteration in the position of the heart, to distortion of the auricles, and consequent obstruction to the blood current. Dr. Adami had been reminded of this case on seeing the outlines of the heart in Dr. Campbell's case, and thought that it might be due to a similar condition.

DR. MCCONNELL had examined the case and was inclined to look upon it as one of pulmonary regurgitation. The marked thrill over the pulmonary area and not felt elsewhere could not be explained by pericarditis but might be due to regurgitation through the pulmonary valve. The

pulse was small, and one would expect a small pulse when there was a great deal of pulmonary regurgitation, as there would be less blood going to the lungs and consequently less in the systemic circulation. The hypertrophy was probably entirely confined to the right ventricle, and the slight systolic murmur would be accounted for by a slight amount of stenosis. The mitral valves were apparently intact.

DR. F. M. FRY thought that if the thrill were due to a pericardial condition, one would naturally expect to find it at the base of the heart. The small pulse would also be accounted for on the supposition of adherent pericardium.

DR. CAMPBELL, in reply to Dr. Hamilton's suggestion of aortic regurgitation, said he had naturally thought of that on first seeing the case. He had excluded it, however, on account of the condition of the pulse. In the five or six cases of aortic regurgitation which he had seen in young children, one of the most marked features had been the beating of the whole body. With such an enormous heart and a sudden fall in the blood pressure, as was found in aortic regurgitation, it was not uncommon to have not only the body but even the chair on which the child was sitting shaken by the heart's beat.

Of the other alternatives, he had been inclined to favour adherent pericardium as the most likely. In a case which Dr. Finley had seen with him some years ago where there had been a very large heart and a number of murmurs which could not be explained; autopsy had shown only an enormous heart with an almost universally adherent pericardium and normal valves. This and the presence of a slight retraction of the space which corresponded to the apex beat, had made him decide in favour of adherent pericardium. In discussing the question of pulmonary stenosis, he thought the extremely loud second sound at the pulmonary cartilage was incompatible with pulmonary stenosis and regurgitation. At the same time he felt that it was a case which could not be decided definitely and that it might be of interest to the society.

#### **Gastric Ulcer—Repair and Perforation.**

DR. ARNDREW MACPHAIL exhibited a specimen which he said well demonstrated the power of nature for repair.

The specimen, a stomach, had been taken from the body of a young woman who had died very suddenly on November 10th. She had been brought to the Western Hospital in a state of collapse with a diagnosis of rupture of the stomach. On opening the body a large amount of blood had welled up from the under surface of the liver showing that a perforation had occurred. The point of interest, however, was that two inches from this rupture there was found, on removing the stomach,

a second opening at least one inch in diameter, which had long since been securely repaired by a mass of adhesions.

DR. G. E. ARMSTRONG said that this repair was commonly seen on the operating table. He remembered that in one of the first cases of perforating ulcers which he had closed, when he had come down on the ulcer there was a perforation as large as a lead pencil. On attempting to suture this the sutures came right out, and examination showed that the ulcer had been partly closed by a great layer of lymph which had to be got away in order to reach firm tissue, and which when removed left an opening about three inches long. The process of repair had gone on and on, and the stomach wall had perhaps been adherent to the liver but had separated through the repair, for some reason, not being sufficiently strong. It was well recognized by all who had operated upon perforative ulcer that it was quite common to find a thick layer of lymph on the serous surface of the stomach, which possibly had to be removed in order to get down to the stomach wall and obtain firm tissue for sutures.

DR. J. G. ADAMI, on examining the specimen, considered that tissue rather than definite lymph, as in Dr. Armstrong's case, had here to do with the repair. Plugs of this nature formed by omentum were fairly frequent. He referred to a paper which he had brought before the society some years previously, in which it had been shown that there was evidence that these omental adhesions might act as plaisters here and there along the whole course of the intestines.

### **The Hæmorrhagic Diathesis in Typhoid Fever.**

DR. A. G. NICHOLLS first pointed out that there were certain diseases, notably the so-called 'idiopathic' purpuras, scurvy and typhus, in which the most striking feature was a tendency to hæmorrhage in certain portions of the body. What was a constant appearance in these affections, was found exceptionally and as a complication of some others, such as typhoid, yellow fever, scarlatina, measles, sepsis, acute yellow atrophy of the liver and cholera.

He next criticised the term 'hæmorrhagic diathesis,' pointing out that since we were forced to conclude that there was in these cases a profound vitium of the blood, and since in some few cases a family tendency to the hæmorrhagic condition seemed to be present, the term was on that account preferable to that of 'purpura hæmorrhagica,' and still more so since there was no agreement between clinicians and pathologists as to what was properly to be included under the latter appellation.

By the hæmorrhagic diathesis in typhoid fever was meant, not those comparatively frequent cases of hæmorrhage from the bowel, epistaxis, or of petechial eruption, but a pronounced tendency to bleeding from



the various mucous membranes and into the skin. That such a condition existed, was recognised by Murchison as far back as 1873, and by Liebermeister, Wilson and Loomis, Wood and Fitz, and Osler.

The condition was very rare. In 12,000 cases tabulated from the published statistics of typhoid fever, there were 18 examples of the hæmorrhagic diathesis. The condition seemed to be more frequent in Montreal than elsewhere, since there were three cases in 543 typhoids treated in the Royal Victoria Hospital besides two others of a less degree. Many isolated cases were recorded but comparatively few had been checked by the Widal test or post-mortem examinations. The majority, too, had not been carefully worked out, so that our present knowledge of the condition was somewhat limited. Owing to the kindness of Dr. W. F. Hamilton, a case was here presented which had been very carefully studied.

V. D., female, was admitted to the Royal Victoria Hospital on June 19th, 1900. There was nothing in the personal or family history which had anything to do with the case. The illness began with chill, pains in the back, and fever. On admission, there was fever, the abdomen was distended, rose spots were present, Widal reaction was present on the 17th day. On the fourteenth day from the onset of the first symptoms, a hæmorrhagic area made its appearance near the umbilicus, following the application of an icebag. Two days later there was intestinal hæmorrhage. The following day epistaxis set in with hæmorrhage from lips and gums, hæmaturia, and conjunctival extravasations. Patient died on the 20th day.

The autopsy confirmed the diagnosis of typhoid fever with the hæmorrhagic diathesis. About 30 ulcers were found, mostly confined to the large intestine; the spleen was small. Bacteriologically the staphylococcus albus was recovered from the blood, the kidneys, and the peritoneal cavity. Several other bacilli were isolated, but were found to be non-pathogenic. A very careful microscopical examination was made of the different organs with a view to finding out the cause of the hæmorrhage. Particularly the condition of the blood vessels was investigated. The most found was a condition of fatty degeneration of the smaller capillaries and basement membranes. No thrombi, bacterial emboli, arteritis or phlebitis, were discovered. The case was regarded as one of typhoid fever with secondary infection with the staphylococcus albus. The hæmorrhage was to be attributed probably to qualitative changes in the blood produced by the circulating toxins of the various bacteria present reacting upon the vessel walls and producing degenerative changes. Whether the hæmorrhage was *per rhexin* or *per diapedesin* could not be determined; all local action of bacteria or plug-

ging of the various vessels had to be excluded. Further, all predisposing causes, such as malnutrition, scurvy, cachexia and hæmophilia, could be excluded.

Dr. Nicholls then gave a very full account of the etiology, pathology, clinical features, and treatment of the condition, showing the relationship which this type of disease bore to other purpuric conditions. The influence of scurvy, rheumatism, hæmophilia, malnutrition, and alcoholism was believed to be but slight. A few cases of a family predisposition were, however, referred to.

The condition was commonest in childhood and early adult life. Most cases were found in those suffering from a severe typhoidal infection. With the single exception of the presence of the hæmorrhagic lesions, the morbid anatomy of the condition did not differ much from the ordinary type of typhoid. Cases are most frequent in the third week, at the time when secondary infection was apt to take place, though primary typhoidal purpura has been observed in the first week. The skin, subcutaneous tissues and the mucous membranes were most frequently affected by the blood effusion next to the lungs and urinary organs. Gross changes in the appearance and coagulability of the blood have been noted, but are not invariably present. With regard to the vascular lesions proper, thrombi or bacterial emboli have not been found in these cases, but at most fatty degeneration of the vessels.

The recorded cases fall naturally into three groups:—

- (1) Primary typhoidal purpura.
- (2) Purpura due to secondary bacterial invasion.
- (3) Cachectic purpura.

The case recorded belonged to the second group. Treatment was mainly symptomatic. Gerhardt discontinues the cold bath treatment and gives vegetable juices, under the belief that the condition is due to a too great indulgence in proteid foods. To control the hæmorrhages, ergot, turpentine, inhalations of carbonic dioxide, injections of calcium chloride or gelatine, had been recommended.

Dr. Nicholls concluded by attempting to simplify the present classifications of the known purpuric conditions, since most pathologists were now agreed that the majority of these conditions were due to infection. As researches became more numerous the list of the infectious purpuras was gradually extending. He suggested the classification of cases into five main classes of 'essential,' 'symptomatic,' 'cachectic,' 'toxic,' and 'disseminated sarcomatous.' The essential purpuras included the so-called 'idiopathic' purpuras, Werlhoff's disease, Schönlein's disease, purpura simplex, peliosis rheumatica, purpura urticans. The purpura of typhus and the primary purpuras of scurvy, variola, scarlatina, measles

and typhoid, might possibly be included under this heading, though it was better to include them in the second group. The second group included all secondary or complicating purpuras found in the various infectious diseases, as typhoid, plague, sepsis, yellow fever, icterus gravis, acute yellow atrophy of the liver, variola, measles, scarlatina. The third group included those forms found in pernicious anæmia, leukæmia, heart disease, Bright's disease, carcinoma, and in the period about convalescence in infectious fevers. It was possible that many of them belonged to the category of 'infectious' purpuras. The fourth group contained those purpuras occurring in snake-bite and poisoning from various drugs, antipyrine, phosphorus, copaiba. The fifth group where with a diffuse sarcomatosis there was a sarcomatous invasion of the vessel walls. These cases might be complicated with infections. The first two classes, and perhaps the third, were infectious purpuras, and the fourth and fifth were non-infectious.

DR. C. F. MARTIN, speaking of the connection of purpura with other diseases held that the explanation of it was not easy, because the causes were so various. The commonly met with forms of purpura might be said to be due to infection, and in other cases, such as the purpura met with in arterio-sclerosis, and in certain cases of sarcoma, it was also thought to be due to infection. He referred to two cases, reported by himself some time ago, in which purpura was present, and in which the bacillary origin was by no means evident. Many cases were noted in athletes and in people who were in the best of health, in which the bacillary origin could not be demonstrated, and yet which ended fatally.

DR. T. W. MILLS was pleased to note that in the study of this subject Dr. Nicholls had taken into consideration the condition of the vessels as well that of the blood. It seemed to him that the fact that both the vessel and the contained blood arise from the same embryonic layer, would lead one to look to changes in the vessel walls as well as in the blood for a possible explanation of the cause of purpura and allied states.

DR. LARTHORN SMITH, after alluding to the vomiting of blood in patients who died of septicæmia after operation, thought that much the same explanation could be given for the vomiting of blood in typhoid as described by Dr. Nicholls. The blood assumed a black or coffee grounds appearance from contact with the gastric juice. He considered the condition due to septicæmia, and destruction of the blood vessels either by bacteria or by their ptomaines. He had seen purpuric eruptions in septicæmia several times with hundreds of spots varying in size from a split pea to a five cent piece, and in nearly all these there had been this vomiting.

DR. W. W. FORD, in referring to the treatment by the subcutaneous



injection of a solution of gelatine, as recommended by Lancereaux for aneurysm, related the experience obtained in Dr. Osler's clinic by this method. Of some ten cases treated, only two showed improvement. The first was a large thoracic aneurysm which was treated twice a week during one winter with subcutaneous injections of gelatine; the pulsation rapidly disappeared the dyspnoea was lessened and the general effect on the patient was good. The other patient had a large abdominal aneurysm and received the same treatment for a similar period of time, but without improvement. On death occurring some eight months after the treatment, the autopsy showed the aneurysm to be absolutely free from any clotted blood and its walls to be quite smooth. This point in Dr. Nicholl's paper, as to how it was possible to increase the coagulability of the blood, was a very interesting one.

DR. FINLEY asked if any of these cases had been treated by large doses of the coal-tar products as he had thought that these might sometimes have this effect.

DR. SPIER believed that the fact that purpura was so frequently met with in connection with infectious diseases would point to the specific toxins in the blood as a factor in its production. He had met with it three times in scarlet fever and once in measles, and it was well known to occur in smallpox.

DR. G. GORDON CAMPBELL thought that it was pretty generally recognized that some individuals, especially among children, were peculiarly liable to have purpuric eruptions from comparatively slight causes. The simplest instance that he could recall at the moment was the liability of flea bites in certain children to produce purpuric spots. Quite recently he had seen two children from the same family, apparently equally exposed and in good health, in one of whom there was a well marked purpuric eruption due to flea bites, and in the other very little evidence of subcutaneous hæmorrhages having occurred.

DR. W. F. HAMILTON, apropos of Dr. Campbell's remarks, stated that he had seen an outbreak of measles in an institution having about a hundred children. Among these was one girl who had suffered from purpura for perhaps five years off and on, and she was the only one among these children to have a purpuric eruption. A very scanty ordinary eruption of measles was present but over the whole body, and involving some portions of the mucous membrane of the mouth, there had been a diffuse purpuric eruption. She had made an uneventful recovery. It was interesting to find that in this case it had been the hæmorrhagic type of measles which developed.

DR. J. G. ADAMI said that when one read the literature of purpura one was confounded by the number of causes suggested and possibly



in action in inducing this condition; he was glad to see that Dr. Nicholls had been very cautious in drawing conclusions. He was glad to hear Dr. Mills calling attention to the vessel walls as a factor in the etiology. A day or two previously he had been criticising Dr. Nicholls for employing the term Hæmorrhagic Diathesis for this condition, but on thinking it over had come to the conclusion that the term might properly be employed. In hæmophilias, some slight lesion was required as a cause before the condition declared itself. In this case the typhoid might be the cause of a slight weakness of the vessels; in ordinary health the vessels might perform this function perfectly, but with the typhoid intoxication the walls might give way more easily in them than in other individuals. He had seen Dr. Nicholls' specimens, and it had struck him that here, looking at those stained for fatty degeneration, the endothelium of the vessels in the hæmorrhagic areas was markedly degenerated. This in itself appeared adequate to explain the purpuric eruption.

Many authors had been of the opinion that thrombosis played an important part in the production of the purpuric hæmorrhages. With Dr. Nicholls, he would point out how difficult it was to be perfectly certain that this formation of hyaline and other thrombi was primary and not secondary. Dr. Nicholls' case, so far as it went, certainly favored the idea that it was secondary; for in his case he found hæmorrhages without evidence of vascular plugging. The course of events, in this case at least, would seem to be degeneration of the endothelium, weakening of the same, hæmorrhage through the weakened walls, and now, if the weakening of the endothelium advance with definite death of the cells, then the necrosed tissue might form a starting point for the development of thrombi.

DR. NICHOLLS, in reply, said that the whole subject of purpura was very interesting, but it was absolutely impossible to go into the matter from every standpoint. He was quite aware that a great many cases of purpura occurred, for example, in connection with heart disease, Bright's disease, and in many cachetic states but it was open to doubt whether these were infectious or not. Then there was the question of the purpuras which were due to the exhibition of certain drugs; these of course were not due to infection. However, in looking over the work done he had been struck with the general consensus of opinion, for the vast majority of observers have now concluded that 99 out of 100 cases of purpura are really due to bacterial invasion. To him the probability seemed to be that the blood-change was the most important one. There was unquestionably an alteration in the blood and it was pretty hard to say how this was brought about unless

it was by bacterial toxines and of course the action of high fever. Granting that this was so, the nature of the resulting degenerative changes in the heart might lead to weakened circulation and changes in the vessel-walls and thrombosis might subsequently be induced. All these lesions no doubt tended to bring on the condition. No one factor was sufficient to account for all the cases.

With regard to the point raised by Dr. Finley about the treatment, most cases recorded so far were previous to the last eight or ten years and he noticed that in a large series of cases referred to by Weigert treatment with quinine was given. In one of his own cases quinine had been given, nine grains a day, and he had thought of it as a possible cause. Still he could not convince himself that the quinine had anything to do with it.

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*Stated Meeting, November 30, 1900.*

JAMES PERRIGO, M.D., PRESIDENT IN THE CHAIR.

### **Rodent Ulcer,**

DR. A. E. GARROW showed a woman, 71 years of age, with a rodent ulcer of the nose which he had treated by removing the diseased tissue and promoting healing by granulation.

Twenty-two years ago the woman developed three small nodules in the typical situation at the upper corner of the eye. These broke down and gradually ulcerated and were followed by a new crop of tubercles on the other side. The sore covered the whole right side of the nostril from the angle of the eye, and extended pretty well over to the left side. It was dry, covered with a scab, and exuded no fluid; the edge was distinctly infiltrated, not very much elevated, and no surrounding nodules could be felt in the skin. It was not at all painful. The method adopted for treatment and which had given very good results, was removal by the scalpel of the tissues surrounding the ulcer for at least a quarter of an inch, and the dissecting of the whole base of the ulcer from the underlying tissues. After this, when the bleeding had been stopped by twenty-four hours compression, Nougard's paste was applied for twenty-eight hours. This was followed by sloughing and the healthy granulating area was treated, and healthy skin resulted.

The important point of view was that many of these cases showed extensive ulceration without deep involvement. This case did not involve the bones although it had existed for twenty odd years.

DR. E. W. ARCHIBALD exhibited stained sections of the ulcer under the microscope showing very typically the very small size of the cells.

**Myelo-Sarcoma of the Leg.**

DR. E. W. ARCHIBALD exhibited a specimen consisting of a leg removed by Dr. Garrow, the subject of a myeloid sarcoma. The tumour had evidently started in the medullary cavity of the tibia or in the cancellous tissue of the head, and it involved the whole upper portion of the bone. It had destroyed the cartilage upon the head of the tibia but had not yet gone through the synovial membrane. It extended downwards to below the tubercle of the tibia, and had broken through the bone on all sides, and before operation the egg shell crackling sound typical of these tumours was readily made out. The whole thing was now a soft mass, which had very extensively broken down and was largely hæmorrhagic. A frozen section made that afternoon had not been clear enough to render the microscopical diagnosis certain.

DR. A. E. GARROW stated that the patient had first come under observation last April complaining of the pain in the knee, when some swelling in the outer and upper tuberosity of the tibia and some abduction were noted. The tuberculin test was negative though two doses were given, and a diagnosis of possible sarcoma was made. There was no egg shell crackling then, no dilated veins, and no pain except on movement. She left the hospital and returned later when Coley's fluid was used with no apparent benefit, but the attending physician believed that it somewhat diminished the size of the mass. Later on the mass increased in size, became painful at all times, and the patient lost considerably in flesh and became markedly anæmic. The pain was very severe and constant.

DR. J. ALEX. HUTCHISON had used Coley's fluid in some half a dozen case two or three years ago for recurrent epithelioma of the neck, and although he was not satisfied that any change had occurred in the growth itself, the sloughing portion certainly had seemed to clear up.

**Tubal Pregnancy.**

DR. LAPHORN SMITH reported two cases of tubal pregnancy from one of which DR. ANDREW MACPHAIL exhibited the organs removed at operation. See page 11.

DR. J. M. ELDER asked Dr. Smith if he understood him to say that he had removed the good tube and ovary and if so for what reasons.

DR. SMITH was very glad that Dr. Elder had asked the question as it brought up a very important point and one which had caused a great deal of controversy. He had removed the second tube and ovary in the thirteenth case in order to prevent further trouble and a recurrence of the condition. Quite a large number of cases have been reported in

which a woman who had gone through this terrible danger and been operated upon, had been exposed to the same danger a year or two later by the occurrence of the same condition on the opposite side. Besides this, he believed that where one tube was diseased, in 95 out of 100 cases, the other tube was diseased also, and he considered it wiser so to complete the operation at one time so that he would not be called upon to operate a second time for the same thing. In the fourteenth case he had left the other tube and ovary at the patient's request.

DR. D. J. EVANS related the history of a patient who had been operated on for tubal pregnancy, the left ovary and the right tube being removed. The left tube was carried back over the uterus so as to approximate somewhat to the other ovary. She was now shortly expecting her confinement.

DR. ELDER was glad that Dr. Smith had the courage of his convictions to get up and say that his procedure was the proper thing to do. Dr. Evans had reported a case where pregnancy had followed operation for tubal gestation and under peculiar circumstances. The speaker had known of similar cases where women had borne children after being operated upon for tubal pregnancy, and he did not think it was right for Dr. Smith or any other surgeon to mutilate a woman by removing more than was actually diseased.

#### **General Emphysema Complicating Measles.**

DR. D. J. EVANS reported this case. See page 8.

#### **An Error in Diagnosis.**

DR. H. A. LAFLEUR reported a case of error in the diagnosis of intestinal perforation in typhoid fever.

DR. G. E. ARMSTRONG felt that this question of the early recognition of typhoid perforation was becoming more and more important and that a good many surprises were developing in the practice of different surgeons as the result of operative procedures. While certain cases occurred where there was no doubt about the condition, the perforations met with in the Montreal General Hospital had not as a class been accompanied by those well marked signs which were so generally looked for. He thought that one reason why a larger number were not recognized early was because the symptoms were so mild and indistinct. The pain was often not at all severe and there was not always any evidence of shock, and sometimes it was absent altogether. Pain occurring with rigidity and tenderness was not sufficiently marked in these doubtful conditions to warrant a diagnosis. If we would save a larger number of cases we must expect occasionally to open the abdomen without finding perforation.



The speaker was inclined to think that the symptom of leucocytosis was not a safe guide as it might occur in other conditions accompanying typhoid. In a case of perforation seen by him two days previously a blood count had shown 6000 white cells and two hours after the operation only 4000, though the pulse had gone from 96 to 116 and the temperature had risen from 103° to 106°. Dr. Lafleur's case possibly illustrated a point made by Warren that a few hours after the perforation there might be a leucocytosis of from 18,000 to 30,000 falling perhaps in six or eight hours to the normal. In Dr. Lafleur's case the count had been 17,000 to 18,000 at mid-day, 10,000 at six o'clock in the evening, and 6,000 to 7,000 at nine. Warren had also shown that similar symptoms were present in other conditions such as localized peritonitis possibly set up by the germs or toxines getting through the thin bowel wall, and enlarged mesenteric glands were found in four of his twenty-nine cases, as the only evident cause of the pain and tenderness.

With regard to the time of operating, one had to choose between shock and infection. Keen thought that cases did better by waiting for eight hours and allowing the shock time to pass off. The speaker thought that in cases where there was no shock present the operation should be done at once and he believed that in cases done at once the operation was not followed by any shock to the patient. The operation could be done in ten or fifteen minutes, the temperature fell and remained down considerably lower for twenty-four hours and the patient's condition was not much worse than without operation.

Another point the speaker felt strongly upon, was that if perforation was diagnosed and one was prepared to stick to it but felt it wiser to delay operation, a good dose of morphia should be given to arrest peristalsis. Its advantage was that when operation was performed the intestines would be found lying quite still and quiet. In one of his cases with a rising temperature to 106° he had given  $\frac{1}{4}$  grain of morphia and operated three or four hours afterwards, about nine hours after the perforation. There had been no pus found in the peritoneal cavity and the coils of adherent intestines were lying perfectly quiet, and the infection had remained localized. When he had separated these coils there was a perforation with three other spots just ready to perforate and four or five more not far off that were dangerously thin.

DR. N. D. GUNN asked if Dr. Lafleur thought the large glands mentioned by him were the cause of the symptoms simulating perforation.

DR. C. F. MARTIN, speaking of leucocytosis as a sign of impending perforation, stated that he and one of the fourth year students had been trying to determine the value of this symptom. Unfortunately the number of cases of perforation at the Royal Victoria Hospital had been

very small, but in those they had examined leucocytosis had been present. The results of a series of observations of this kind had, however, certainly gone to show that this sign was not of as much value as had generally been supposed.

DR. A. E. GARROW asked whether the evidence of free air in the peritoneal cavity had not been more or less a constant symptom when taken in connection with diminution of the liver dulness. In the cases which he had examined personally, he had looked upon this as a symptom of some importance when taken in connection with pain and rigidity.

DR. J. M. ELDER had a word to say about the matter of leucocytosis. During the past summer he had had several cases of perforative ulcer in typhoid fever on which he had operated unsuccessfully as far as saving the patient's life was concerned. In these cases an estimate of the number of white corpuscles had been made, but in none had there been any leucocytosis, so that he felt that it was not a reliable sign.

With regard to the clinical question of operation, he thought that the surgeon must be prepared to open the abdomen when a group of symptoms, such as the reader of the paper gave to-night, was present, if there was to be any advance in the surgical treatment of these typhoid ulcers. All surgeons had opened the abdomen in cases of appendicitis which had given the same sort of history, and had found very little the matter with the appendix. With regard to the time of operation, it seemed to him that, as experience was gained, the stage of the disease and when the perforation took place, would have to be taken into account. Many cases showed a bad result at the post-mortem from the fact that the disease had gone on to a fatal result in spite of the success of the operation in closing the perforation. Dr. Armstrong's idea about giving a dose of morphia seemed to him a good one.

DR. ARMSTRONG did not place any value on the presence of free gas in the abdominal cavity diminishing the liver dulness. He had opened the abdomen and had gas escape without any material lessening of the liver dulness having been present. On the other hand, a distended colon by tilting the thin edge of the liver upwards lessened the dulness. He advised the use of morphia because it kept the intestines quiet and did not favor peristalsis.

DR. A. G. MORPHY, speaking of the difficulty of diagnosis, about a year ago had a case of typhoid in which, during the subsidence of the fever, there had been a sudden rise of temperature with severe pain in the abdomen and rigidity. Dr. Lafleur, whom he had called in managed to find a pleurisy which the speaker had not suspected.

DR. A. LAPTHORN SMITH dwelt upon the value of a sudden rise of the pulse rate as an evidence of peritonitis.

DR. F. R. ENGLAND referred to the discussion on typhoid fever which took place during the last session of the society, and stated that the conclusion had been arrived at then, that it was bad practice to open the abdomen unless the existence of a perforation was rendered pretty positive. He felt that it was likely to render the chances of recovery less if the abdomen was opened while the patient was in this typhoidal state, and that it ought not to be done merely as an exploratory procedure. He thought that Keen's best results were obtained after waiting some hours after perforation was thought to have occurred, allowing the patient to somewhat recover from shock. It was fortunate if a reasonable delay was warrantable, for in most cases it would probably give ample time to make a pretty positive diagnosis.

DR. LAFLEUR, in reply, thought it was very probable indeed that the pain complained of was due to the swollen and inflamed glands. He had been glad to hear Dr. Martin's remarks about leucocytosis as they coincided with his own ideas. He also agreed with Dr. Armstrong in putting no value on the diminution of the liver dullness.

He took exactly the same view as Dr. England, that if there was a reasonable probability of perforation, operation may be performed; but he did not think one should approximate typhoid perforation with appendicitis. In the latter one had to all intents and purposes a patient in a perfectly healthy condition. At the same time one must take the risk, as there was no other way of saving what might be a perforative case. As regards the fall of temperature referred to by Dr. England, he did not lay much stress upon this when the patient was getting cold baths every two or three hours, as one could not tell whether the fall was not due to the bath. He would make the suggestion that the presence or absence of leucocytosis might depend upon the exact nature of the infection. In those cases where there was a colon infection, practically as a pure culture, he would like to know whether leucocytosis took place or not. On the other hand, where there was a streptococcus infection, he did think it took place in some cases.

#### **Four Cases of Fracture of the Pelvis.**

DR. J. ALEX. HUTCHISON reported four cases of fracture of the pelvis. See page 14.

DR. WYATT JOHNSTON exhibited the specimen of one of Dr. Hutchison's cases. The case was of interest as showing the extreme degree of the injury and the curious fracture of both the rami and the top of the pubic bone, and one of the small iliac joints was also loose. The bladder had been torn, and there was some infiltration of urine about the pubes,

and a reddish urinous looking fluid in the region behind the bladder. The rupture in the bladder was, however, quite a small one, rather superficial, and did not penetrate at all. The urethra was torn across at the ligament, and apparently the general tearing of the tissues had led to the infiltration of urine.

DR. GARROW said that Dr. Hutchison's paper was, of course, a surgical one and he had not taken up some points of special interest in this class of cases. It would be of interest to know the prognosis and whether recovery was complete after the ordinary injuries to the bones of the pelvis and tearing of the soft parts. The speaker had only seen one case, that of a man who had had his pelvis fractured and who still suffered from periodical attacks of very intense pain once or twice a month, the cause of which could not be determined.

DR. HUTCHISON, in answer to Dr. Garrow, said that in ordinary simple fractures of the pelvis, wings and symphysis, the usual results of simple fracture could be obtained. Fractures in the neighbourhood of the symphysis made an uneventful recovery. In another class of cases more severe injuries were often present and not recognised, such as rupture of the bladder. In one case which had come under his notice, an attempt had been made to pass a catheter and a rupture had been found in the membranous urethra. The physician attending the patient did not seem alive to the condition present, and allowed many hours to pass before sending him to the hospital.

The prognosis depended entirely upon whether one had severe lacerations in the pelvic area, where the loose cellular tissue readily allowed a septic condition to develop. A fracture without this extravasation of urine would simply have the same prognosis as any compound fracture without suppuration.

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#### OTTAWA MEDICAL SOCIETY.

A meeting of the Society was held on Friday, November 30th, in Water Street Hospital, for the demonstration of clinical cases and pathological specimens.

##### **Living Cases.**

DR. HORSEY showed a case of hereditary syphilitic disease presenting facial scars, marked kerato-iritis, and ulceration of the vomer.

DR. DEWAR showed a case of compound communicated fracture of the tibia and fibula treated by incisions, removal of loose fragments, and drainage with fixation. After four months treatment a small sinus still persisted at the ankle, but the result was most satisfactory.

DR. TROY showed a case of extensive recurrence in the inguinal glands



after amputation of the penis four years ago for epithelioma. The right groin was occupied by a large inflamed and ulcerated mass of glands. The right leg was very much swollen. The patient was under treatment by the injection of Coley's fluid.

DR. BRADLEY showed samples of the photography of patients before and after treatment recently inaugurated by the official photographer to the hospital.

### **Pathological Specimens.**

DR. KIRLEY, pathologist to the hospital, showed a large multilocular cyst, weighing when fresh with contained fluid forty-five pounds, and removed by Dr. Dewar recently. Fibroids of the uterus removed by Dr. Chevrier, an extra-uterine foetation sac, and a large varicose cyst over the saphenous opening with a large tortuous vein leading from it, were also shown.

### **Cocainization of the Spinal Cord.**

DR. PREVOST reported an operation for femoral hernia performed on November 27, at St. Luke's Hospital, under cocainization of the cord.

Fifteen minims of a two per cent. solution of cocaine hydrochlorate were injected into the arachnoid cavity after ten minims of the spinal fluid had been allowed to escape. Insensibility to pain over the lower limbs and lower part of the abdomen was complete enough in thirteen minutes to allow the operator to proceed. The operation was completed without trouble in twenty-five minutes. Slight mydriasis followed but no vomiting. There was intense throbbing, darting headache, especially occipital and in the back of the neck. This was relieved by ten grain doses of antikamnia. It did not entirely disappear until the third day.

The temperature rose to  $101^{\circ}$  on the second and was not normal until the third day. The patient had a severe attack of herpes on the right side of the face and lips appearing on the third day.

Dr. Prevost then discussed the diagnosis of a very movable abdominal tumour about the size of a kidney, which turned out to be a cancer of the pylorus with considerable gastrectasis.

DR. KIDD reported a similar case in which there was also a right kidney which was floating.

T H E

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

EDITED BY

THOS. G. RODDICK,  
A. D. BLACKADER,  
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JAMES STEWART,  
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FRANK BULLER,  
H. A. LAFLEUR,

WITH THE COLLABORATION OF

WYATT JOHNSTON.  
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J. M. ELDER,  
D. J. EVANS,  
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T. J. W. BURGESS,  
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## MEDICO-LEGAL DIPLOMAS.

We publish below a communication relative to the establishment of a medico-legal course. We understand that the matter is now receiving very careful consideration from the Medical Faculty of McGill University and that a diploma is likely to be established. We would emphasize especially the necessity of our medical schools providing adequate practical courses in the special lines of work needed in railway surgery and in accident and life assurance. If it were known that special competence in these subjects can be acquired and certified to academically, we predict that the corporations interested would soon show a decided preference for those holding certificates in these subjects in making their appointments.

We hope that the course may be established and that it may prove successful, in which event, Canada could claim credit for being the first English-speaking country to move effectively in the matter.

We have been asked to publish the following communication, which is part of a report to the Education Committee of the Medical Faculty, McGill University, Montreal, by Dr. Wyatt Johnston, with regard to the establishment of a post-graduate diploma in Legal Medicine.

"Academic regulations defining what qualifications should be officially recognized in Legal Medicine have existed for many years in most European countries and have recently been established in some which had depended upon other methods of deciding as to fitness for medical expert work. Were it necessary to do more than point out the general advisability of establishing such qualifications, I could cite numerous statements from responsible authorities on the medical and legal, as to the evil results of haphazard or political methods of selecting medical experts.

"While it might perhaps be desirable that the legal authorities should be the ones to move first in the matter, experience elsewhere has shown that unless the teaching bodies take the initiative, nothing is done. It is clear also that teaching will probably be better done by those whose duty lies in teaching rather than routine official work. What may be fairly expected of the official bodies is to see that sufficient facilities in the way of teaching material is afforded and that as far as possible, special qualifications of this kind be taken into consideration in making appointments. So long, however, as there is no recognized means of determining who have proper qualifications and who have not, it is difficult to see how the public authorities are to decide as to which candidates are fitted to fill a given vacancy. This consideration has probably been that which has led to the establishment of medico-legal diplomas elsewhere. The fact that the total number of experts required is very limited does not affect the principle involved.

"Assuming that it is desirable on general grounds to establish a medico-legal diploma the questions to be decided are :—(1) What shall be the standard? (2) How shall the teaching be carried out? (1) Standard for diploma on legal medicine.

The method of adopting some well recognized standard has many advantages not only in giving value to the certificate, but in simplifying the problems in connection with teaching arrangements.

After careful study of the matter, I am of opinion that the standard recently adopted by the Faculty of Medicine of Paris and endorsed by the Medico-Legal society of France (the details of which are given in a recent report by Prof. Brouardel, Dec. 20, 1899), is the most suitable for our purpose provided that certain minor modifications are made. These are called for first by the fact that all our medico-legal students have to pass a compulsory course of 6 months duration on legal medicine and 3 months on mental disease which are optional in France.

Second, it would be well to homologate the course as regards time of  
The French diploma course in legal medicine calls for :—

1. A period of study covering an entire academic year (9 months) subsequent to graduation in medicine.

2. Attendance on a general course of lectures on Legal Medicine and Mental Diseases if this has not been done as a student.

3. Practical instruction in autopsy methods under the tuition of a medico-legal expert.

4. Practical instruction in the medico-legal examination of living persons and in making examinations of blood stains, etc.

5. An elementary practical course in toxicology.

6. Practical instruction in mental medico-legal work with clinical experience in mental diseases.

7. A written and practical examination covering the above subjects.

This was adopted by the Paris Faculty upon the recommendation of Prof. Brouardel.

The modification course which I would recommend would be as follows (following the lines of the Diploma Course of Public Health).

1. Six months' scientific training subsequent to graduation upon medico-legal pathology, bacteriology, chemistry and microscopy.

2. Six months' practical experience under a medico-legal expert having facilities recognized as adequate for instruction in the various departments of legal medicine. (Of this not more than 3 months to be concurrent with the work under article 1.)

4. Attendance on special advanced courses in legal medicine.

5. Elementary practical toxicology.

6. Instruction on medical law.

7. Clinical instruction and practical medico-legal work in connection with obstetrical, surgical and mental cases.

8. Written and practical examinations on the above before examiners having special qualifications. Not less than 12 months to elapse between graduation in medicine and the obtaining of the diploma.

Practical instruction in the methods of examination for life—and accident—insurance and in the estimation of disability resulting from injury would appropriately be made to form part of such a course.

With reference to 4, 5 and 6 I think it should be understood that the diploma is of a general nature and does not intend to qualify as a specialist expert on chemical, mental, obstetrics, and surgical questions. This should call for evidence that the person has a special training in any one of these branches implying at least an additional year of special study.

I think it would be well to communicate with the Provincial Government, pointing out the advantage to it of having instruction of this kind given and asking that such opportunities as they can give without detriment to the public service be placed at the disposal of those giving the course. Opportunities of a corresponding kind afforded by the



health boards were of material aid in carrying out the Diploma course in Public Health.

Several applications have already been received from graduates wishing to take the course in the event of its being established.

I may state the conclusions of the reports briefly as follows :—

1. The establishment of a diploma course in legal medicine is a necessary step for the proper training of medico-legal experts.

2. It has been found necessary in other countries for teaching bodies to take the initiative in this matter.

3. A standard equivalent to that of the new French diploma of legal medicine would be adequate and feasible. The schedule of the course could be made to correspond with that of the English diploma course in Public Health as now given by this Faculty.

4. This would call for 6 months' scientific training and 6 months' practical medico-legal work for which 3 months may be concurrent ; also for special courses on medical law, medico-legal pathology, microscopy, chemistry, obstetrics, surgery and psychiatry. The diploma could not be obtained in less than 12 months after graduation. The above special studies to be in addition to the ordinary medico-legal requirements for the degree in medicine.

I remain,

Yours respectfully,

(Signed), WYATT JOHNSTON."

Montreal, Nov. 14th, 1900.

## Proceedings of the McGill Medical Society of Undergraduates.

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### THE MEDICAL STUDENT AND HIS PROSPECTIVE CAREER.\*

BY

PROFESSOR FRANK BULLER, M.D.

There is in all human affairs a general law of averages, which enables the student of economics to foretell with reasonable certainty the chances of success or failure of business enterprises, and of communities or individuals engaged therein under certain known conditions; for instance, all the different varieties of insurance, life, fire, marine and accident, are based on the law of averages, which taken the world over remains immutable though subject to local modifications dependant on altered conditions of a temporary or local character. So that things which in a way are subject to the universal law have to be studied in detail, and in a local sense, by those whose interests are restricted to the limits of any particular country, district, locality or community in each of which human affairs have their own more or less modified law of average.

The same may be applied of course to every class of persons who have in some way differentiated themselves from the community as a whole.

The soldiers and sailors of a nation can easily be shown to have definite average income, chance of promotion, duration of life, etc., etc., subject of course to the chances of war and other perturbing influences, and it is not difficult to understand that a careful study of any other class of individuals will yield a fairly exact knowledge of the same kind in regard to these. I do not know that anyone has undertaken such a task in reference to the medical profession; however interesting researches of this kind may be it is more than doubtful whether the person undertaking them would ever reap a satisfactory reward.

Nevertheless, I purpose in this address to give you a few thoughts along these lines derived partly from my own observations and partly from reading and hearsay.

I think it may be accepted as true that everyone who chooses the medical profession as his life-work, at the outset cherishes the hope that he may make a success of it.

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\* Read before the Undergraduates' Society on Dec. 7, 1900.

It is possible that all do not take the same view of what constitutes success. One may say my life will be a success just in proportion to the amount of good I may be able to do unto others, irrespective of any benefit that may accrue to me in a material or pecuniary sense. Another may say the esteem and good will of the people I live among is the reward I have in view; another may look upon the chances of amassing money as the chief incentive to entering the ranks of the profession, or a combination of these and perhaps other motives not so easy to define may determine the choice. Some enter the profession as a matter of choice because they have a real liking for the study and work pertaining thereto; these are the ones who become diligent workers, and attain the highest positions in the ranks; the rewards for merit which never come to the careless, the indifferent, the negligent and slothful. Give heed to the maxim "Honors come by diligence: riches spring from economy."

Some are thrust into the profession by parents, friends or guardians, because it is a respectable calling and open to all who can spend a few years time and the modest sum of money necessary to acquire a medical degree: many of these become "chronics" in our classes for they love not their labor.

After thirty-five years association with medical students and their teachers, and twenty-five years a member of the teaching staff of this school of medicine, I do not hesitate to say that I have never known a single teacher or examiner in any medical school, or one member of our faculty, who was not sorry for any or every student that failed to pass his examinations, nor one that was not sincerely pleased with each who passes creditably to himself and his college. From this you will see that everyone of you has from the outset the entire good-will and co-operation of those who are ultimately obliged to decide for, or against, in the pass examination. It is my firm conviction that there is not a British or American school of medicine in which the curriculum of study is placed so high that any student of average ability is justified in failing in any of his pass examinations; should he do so the explanation is to be found in one of two courses, viz:—Want of diligence, or, deficient mental capacity. The first may be compared to a preventible disease; the second, to an incurable ailment. Those who come in either category, are in all probability perfectly aware of their situation and should govern themselves accordingly.

Just think the matter out in a quiet philosophical way and I believe you will agree with me that the examiner who rejects every badly prepared candidate at the earliest possible period, is the students' best friend. Those who feel they have done their best and failed can

and should step down and out and waste no more time in work for which they are not properly equipped by nature. Their average is too low. Those who feel they have not given their best to the cause should awaken from their lethargy and resolve once and for all never to miss another opportunity, or else stand aside and seek no more to enter the profession which of all others has no place for the indolent and careless in its ranks, but presents the greatest scope for all the best qualities found in human nature.

A set back in one or two subjects may be partly due to an element of chance, which cannot be entirely eliminated from any system of examination covering a wide range of knowledge, but apart from this I believe it is a mistake for anyone who has failed in his primary examinations for two consecutive years, to continue his university course. The world has need of his special talents in some other sphere of action and in the long run the world does take most men for just about what they are worth. I have not the least doubt that every trade, profession or calling in life contains many who are not fit for their vocation and I will go further and state, without fear of contradiction, that there is not one present here to-night who has not had opportunities of observing the truth of this assertion as applied to the medical profession, as well as other occupations. It will be an ideal civilization when some method has been discovered whereby everyone shall be allotted exactly the work for which he is best adapted.

Of one thing we are at present reasonably certain, viz:—That in all civilized countries the medical profession is over-crowded, and that the demand now is rather for quality than quantity. Hence the tendency everywhere apparent to lengthen and augment the curriculum of medical schools. You of the present time will in a few years inevitably have to meet with the opposition of younger men who have been sent out better qualified than their predecessors. If you are wise you will prepare yourselves now to hold your own against all comers.

To me it seems that the most difficult thing every practitioner has to do is the task of keeping up with the procession. The struggle is so constant, so arduous, that only a few are able to keep the pace.

Those who do not succeed in practice, lacking the stimulus of prosperity, become careless and indifferent and make little or no use of such opportunities of study and advancement as come to them, and those who are more fortunate in getting plenty of work find it difficult to spare the time for minute study and careful observation. It is not so easy for a professional man to employ others to do the drudgery as in ordinary business, in fact, there is very little of his work he can



delegate to others under any circumstances, and when the usual day's work is accomplished, how few there are capable of bringing the energy and concentration necessary for efficient work of a literary or scientific character, with the additional burden of being subject at all times to ever recurring interruptions.

There is one way, however, in which everyone engaged in the practice of medicine and surgery can do something to advance his knowledge and keep up with the times; an easy and a pleasant way withall and highly to be recommended. It is this:—We should all make a practice of seeing each other as often as possible in a social way and in regularly attending the meetings of medical societies. Each one should make a point of supporting and attending the meetings of his own local society, and also at the least, one provincial or national meeting every year. Although we may feel inclined to make little of the apparent benefit derived from any particular occasion of this kind there is no doubt that the aggregate result is extremely beneficial. It is only by the friction of mind against mind that the best of us can avoid the ruts and grooves of a mere routine, so fatal to progress of any sort. It has been repeatedly urged by many who have made a study of the business side of our profession, that there are in the first place a great many more doctors than the country needs, some say twice as many as are required. If this be true, our medical schools are partly responsible for a great waste of human energy. Just think of this army of able-bodied men who are fritting away their lives and serving no useful purpose in the national organism. If we look at the question from the standpoint of the wage-earner, we have but to compare the earning power of the average medical man with that of men engaged in other occupations. The common day labourer in this country will earn about one to two dollars per day; mechanics of some skill and special training earn on the average about three dollars per day, or for the labourer \$300 to \$600 per annum and the mechanic, carpenter, bricklayer, engine-driver, etc., from \$600 to \$1200.

If you wish to get an accurate idea of the average value of a medical man's services after several years experience as a licensed practitioner you have only to look into the advertising columns of the "*London Lancet*" or "*British Medical Journal*" where you will see large numbers of public appointments which will take the whole of the holders time and attention, for the munificent sum of \$500, \$750, or possibly \$1000 per annum, with two or three per cent. off as a superannuation fund; and let me tell you such appointments are eagerly sought after by our brethren on the other side of the Atlantic.

Now in the city of Montreal it is said the average income of the

medical practitioner is about \$700 per annum. How much better off is he then than the labourer or mechanic? Or if we believe this estimate is too low and say the average is ten or twelve hundred per annum, how do they compare with clerks and book-keepers, whose education costs comparatively nothing. The advantage is with the latter, as they can live anywhere and anyhow, not so with the doctor who must of necessity pay more for appearance sake or sink out of sight altogether. The public has an absurdly exaggerated idea of people's incomes and especially so of the doctors.' They hear occasionally of one who has made a fortune and then utterly ignoring the fact that this was a rare exception, one perhaps in a hundred thousand, proceed to argue that all others in the same profession must be doing likewise.

I will read you a brief statement in this connection which recently appeared in the lay press, which seems to present this question correctly. "The fact that Sir William Jenner left nearly two millions of dollars has led to much speculation by the English press on the prizes of the medical profession. The *Lancet* has accordingly taken occasion to point out that this money was not made by Sir William Jenner at all; but bequeathed to him by his brother, who was in trade. After going through the list for the last ten years, the *Lancet* comes to the conclusion that greatest fortune made in medicine was that of Sir Wm. Gull (\$1,700,000), and that was probably augmented by fortunate investments. Only two other physicians left over a million dollars—Sir Andrew Clark and Dr. Rhodes Armitage. There are 28,000 doctors in Great Britain and most of them die poor. The *Lancet* seems to have made out its case. The figures bear out a very general impression that the medical profession is hard worked, with few prizes and those not very great ones.

I have known many medical men whom the general public spoke of as "well off" or even rich, who in the midst of this assumed affluence have died in actual poverty, leaving their families wholly unprovided for or at least a meagre pittance.

I have tried to find the names of medical men who had become wealthy by the practice of their profession in this city in the past century and have failed to find one. It is true that half a dozen or so have died fairly well off in this world's goods, but most of these gains may be traced to money acquired by inheritance, by marriage, or, by the rise in value of real estate incident to all growing cities, in which a few cheap lots have in time come to represent a competence. If this be a true picture of your prospect should you seek to work up a city practice? Is there any particular reason why you should expect better things than have fallen to the lot of your predecessors?

Let us now turn our attention to the country districts and see if there is no better fate in store for the young physician. This is what I find:—

In the larger towns there are always at least two doctors where one is wanted and most of them though presenting some outward appearance of prosperity, are living on the verge of poverty; a few, perhaps, one in twenty-five, accumulate some money and if possessed of good business capacity ultimately acquire a modest fortune. In some small towns and villages, which of course absorb the majority of graduates in medicine, we find them as a rule working long hours and subject to every imaginable discomfort for pecuniary rewards not nearly so great as are expected by hackmen and livery stable owners as mileage rates, leaving the question of professional services out of the reckoning.

Let me quote one example which came under my own notice, one of our graduates of over thirty years ago. I knew him well, he was of the sort the people out West would call a hustler. He would work more cheaply and do more work than anyone in his neighbourhood, driving on an average not less than 50 miles per day, Sundays included. He never was a good collector and although nominally making eight or ten thousand dollars per annum, this is how the relentless logic of figures sums up the result. After thirty years practice he died leaving an estate valued at \$25,000, to obtain which he drove in the thirty years 525,000 miles, his net reward being therefore rather less than 5c per mile, or if we allow for his cost of living certainly not more than three thousand dollars per annum, his total earnings were \$115,000; which again translated into mileage gave him just 22c per mile, or three cents less than ordinary cabman's fare, leaving office work and all fees as a professional man out of the reckoning. His only advantage over the cabmen was his more constant employment and corresponding hardship in the way of exposure and loss of rest. How does the prospect please you? And yet this man was the envy of all his less successful competitors, not one of whom in that town has succeeded in accumulating so large a fortune. This is unquestionably a bad showing, a deplorable state of things for the profession as a class, but the facts I have stated are correct or very nearly so. Wherein then lies the fault?

I believe it rests with the profession itself. In their want of co-operation for mutual benefit, in their lack of integrity towards one another. They should seek for some means of avoiding bad debts, remembering that every dollar uncollected is just so much off their net profits and the worst feature of all is that the honest and willing clients are the only ones that pay, whilst the habitual "dead beat" goes Scott



free, though they are often the most exacting in taking up the doctor's time and attention. I do not believe there is a physician in the whole country who is not pestered by this sort of parasite. These too, are the very people who squander their means in useless extravagance of all sorts and there could be no hardship in compelling them to pay their doctor's bills. There are two ways in which this could be accomplished. The first is to exact cash payments for all office consultations; the second would be for all physicians to keep a list of those who do not pay and keep each other informed as to whom these persons are; each one steadfastly refusing to give his services to all who are in debt to any other physician. This can only be achieved by demanding to see a clear receipt in doubtful cases, for all previous medical services. I have often followed this plan myself, and find it gains the patients' respect and never does any harm. Moreover, it removes from the minds of your confrères the bitter thought that you wish to gain by another's loss. You do not need such an evidence of good faith at the first visit, but if you demand it as a condition of further attendance, you will seldom be disappointed and the chances are that by so doing, in addition to the approval of your own conscience, you will have gained the active goodwill of a colleague and the lasting respect of your patient.

Very few patients will be found unwilling to comply with conditions so obviously fair to all parties concerned and those who decline are not really worth having. If all physicians would agree to follow this plan and act towards one another in strict honour, the beneficial results would be incalculable, and would go a long way towards raising the business morality of the whole community. If the profession were not overcrowded, no doubt this simple but most important point in medical ethics would at once receive the general recognition it deserves, but *there is the rub*, the eagerness to obtain practice is constantly subversive of the code of ethics to the great detriment of all engaged in the strife, yet how much better it would be for all to make common cause in doing away with that pest of the physician's life the "dead-beat," that wolf in sheep's clothing who comes with guileless tongue to gain your sympathy and adds insult to injury first by robbing and then by slandering you. That is all you have to expect from the man or woman who comes to you because he has not paid your predecessor.

There are two books I can confidently recommend to every graduate in medicine. The first is "The Code of Medical Ethics," the second is "The Physician Himself," by Dr. W. D. Cathell. If you take them as your guide and follow steadfastly the precepts they contain, you cannot go wrong, more than this, you will win the esteem and warm regard of all who come within the sphere of your influence.



I wish to say a few words in regard to the large class of young men who graduate in our medical schools and immediately disappear by settling down in country villages remote from the larger centres. I would like to see better things in store for these than have been in the past. Theirs is a life of ceaseless toil in soul depressing surroundings.

Many, for want of means, begin life by renting a room, or two, in some small wooden house of weather-beaten exterior and all the environments looking like the last stages of desolation. The interior a rough floor devoid of carpet or oilcloth, shabby paper on the wooden walls, faded and torn; a square ugly box-stove the sole means for providing a scanty warmth in winter; some wooden chairs, a lounge and perhaps a medical chair covered with imitation leather, completes the meagre list of furniture. For wall decorations two or three chromos and an ill-framed diploma. In one corner a short grey-looking wooden counter garnished with unwashed bottles and a few crude instruments of pharmacy, some dusty, grey, wooden shelves on which repose the books used at college; medicine bottles, sundry boxes and untidy odds and ends. A bedroom still more desolate in appearance and appointments with its bed so tossed and untidy that no one could accuse it of ever having been made up. Hundreds there are who start in this way, and although in time the changes incident to a matrimonial venture may effect some amelioration, the man and his surroundings never reach a condition worthy of one whose mission in life is to cheer and comfort his fellow beings. Far be it from me to blame or harshly criticise where fate or destiny has proved unkind, but I do feel that a little more energy, enterprise and ambition, rightly directed, might sometimes work a wonderful change for the better.

Although I would be the last to advise imprudent outlay, or, extravagant pretension, I cannot but think a few hundred dollars judiciously expended in making a good appearance at the outset, even at the cost of going into debt, would be money well invested, since the world judges largely by external evidences, and the smart dapper alert young physician always makes a much better impression than one who is negligent and slothful.

No one can afford to rely upon the knowledge he has gained at college to carry him through life, hence the necessity for new books every year, not many, but a few of the best, and also at least two medical journals, these last to be carefully scanned and an index made of all that seems useful and practical as they come in. Such a system of ready reference will prove invaluable in the effort to keep up with the times.

It follows from the distribution of our population over a very wide

area, more so perhaps than in any other country, that the vast majority of those who practice medicine must of necessity be prepared to attend everything within the whole range of medicine and surgery and there are, fortunately, taking one thing with another only a comparatively few cases cropping up here and there that call for special skill, for a finer knowledge of detail than can be expected of the general practitioner, and of this residuum most can very well wait a few days or longer until special aid can be obtained, provided, however, that no harm is done by undue interference with the aims and objects of Dame Nature. When difficulties arise of a sort requiring greater skill and experience, or better facilities than happen to be within easy reach, it will be well for the sufferer if he finds himself in the hands of one who knows *what not to do*, for surely it were better to do nothing than to do the wrong thing, or even to do the right thing in the way it should not be done. Within the past twenty-five years a growing evil has come upon the profession in the form of an army of immature specialists, men who have taken a six weeks, six months, or even a year of study abroad and then pretend to know all that can be known of all the "ologies" on record, when in reality they have scarcely mastered the rudiments of any one special branch of medicine or surgery. The real specialist is not made in this way, he must be evolved by years of patient toil in clinical work, after he has become "a ripe medical scholar, replete with general experience."

None but those who love work for its own sake are worthy of the name. To me there is nothing so sad as the spectacle of a wasted life, or a promising career blighted by the formation of pernicious habits. A retrospect of the vanished years, of the time when I too had college chums and loved everyone in the class almost as a brother, of those later years with their associations and reminiscences of young men just starting in life, full of hope and energy, recalls full many a history of lives misspent, of deviations from the safe paths of temperance and self restraint. Perhaps in no other profession are there so many pitfalls and snares, so many temptations to err as in ours. It is so easy for the doctor, tired and discouraged as he often is, to seek relief in the use of drugs and stimulants, that the wonder is so many manage to resist the evil genius. All praise is due to those who do resist and only pity, not blame, those who fail. Of these last there would be a still smaller number if everyone realizing the danger and steadfastly resisting the temptation, resolved never to use alcohol or any drug for the purpose of obtaining temporary relief from the inevitable fatigue or discomfort they all at times must endure.

The danger is greatest to those who in their student days acquire the habit of conviviality and good fellowship. Beginning with alcohol and

so weakening the will power, it is an easy step to the use of the deadly narcotics, opium, cocaine and chloral. These things are always at hand but no man is safe who prescribes them for his own use, for no man can be certain that he will have the power to resist a craving once indulged. Therefore the greater the temptation the more need there is to put it from you. I am not here as a temperance lecturer, I only tell what I have seen and know to have been the downfall of many who might otherwise be living to-day, happy in the enjoyment of all that makes life worth living.

It has not been my intention to say aught that would be discouraging to those who are earnestly striving to make the most of their opportunities and I have no doubt some of you will realize your fondest expectations, but for those who do not gain riches and fame there is at least the consolation that you belong to an honorable and useful profession and it will be your own fault if in the end you have not acquired and maintained the respect and esteem of the community in which your lot happens to be cast; and, after all, what need is there of more than this?

## HOW TO TEACH ANATOMY.\*

BY

T. A. TEITELBAUM. M.A., '03.

This is the subject upon which I have been asked to write a paper to be read before the members of this society. Not until I began to think the question over did I realize the many difficulties with which the question is beset. It is not a question how to convey a certain amount of information to a particular individual, but, how to equip a class of men, possessing varying degrees of ability as well as diverse powers of comprehension, with a practical knowledge of that subject which is the very foundation and key-stone of their profession.

The question is undoubtedly one of vital importance, for a perfect knowledge and at the same time a practical knowledge of anatomy constitutes the ground-work of the science of medicine. Anatomy must indeed ever be looked upon as the basis of every branch of medicine, and it is to anatomical investigations that physiology and pathology owe their advancement to the prominent position they now occupy. There is no department, no branch of the medical profession which can claim exemption from the obligations due to anatomy. It is the guiding star of the operative surgeon, and a thorough knowledge of its principles is of the greatest importance to the physician in the estimation of internal and hidden disorders. The discoveries in anatomy have done

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\* Read before the Undergraduates' Society, on Oct. 19, 1900.



much towards clearing away the mist of hypothesis and speculation with which medical science was at one time enshrouded, and it is from continued investigation in this branch of science that we may hope one day to see the practice of medicine, divested of the mantle of empiricism, take its place in the rank of exact sciences.

How then can this all important branch of the medical curriculum be imparted to the student to the best advantage. The methods of to-day are without doubt far in advance of those which were in vogue a hundred years ago. Renbrandt's picture gives us a fair insight to the lack of knowledge which prevailed. The advanced methods of to-day owe their existence to facilities which did not exist in the past. The art of preserving dead bodies from putrefaction and decay; the modern methods of placing dead bodies by means of antiseptics beyond the power of imparting to the dissector that specific virus which is undoubtedly generated after death, more especially where death has resulted from puerperal fever, or, acute peritoneal inflammation; and lastly but not least, the change of sentiment which has followed in the train of enlightenment by which those handling dead bodies are no longer stigmatised as "unclean"; these and many other changes have placed the teacher of anatomy in a place of advantage, and placed at his disposal means by which the theoretical instruction can be demonstrated by practical proof and demonstration. He is as it were equipped with a graphic method, a method which fixes the subject in the mind of the hearer in a manner not to be effected by words alone, no matter how forcible and apt the language may be. It would be impossible to express, by words alone, the different changes of colour or physical character which occur in chemical experiments and which constitute, so to speak, the text-book of the chemist. Following the same line of argument we may say, that a theoretical knowledge of plexuses, anastomoses and the relation of parts such as is imparted by lectures and diagrams, can never fit the surgeon to guide an unerring knife in the delicate and intricate operations he is called upon to perform. Such skill can only result from a teaching that is practical, therefore the teacher of anatomy calls to his aid all those means by which his instruction can take more of the practical form than the mere theoretical.

These means are numerous, but chief among them are the skeleton, models, and the subject of the dissecting room. On the use of the skeleton I shall have but little to say. It is potent to the most casual observer that it is a matter of impossibility to become a master of osteology without the aid of bones. How necessary and essential these bones are to a practical instruction in this branch of anatomy is well illustrated by the well assorted and profuse display of bones and parts to be seen daily on the table of the professor of anatomy.



The utility of models is not without pros and cons. They are undoubtedly a useful means of conveying to the student a vivid and impressive picture of the parts they represent, but the model, with its careful attention to details and its punctilious adherence to general rules does not admit of deviations so constantly met with. They are useful, but, their utility has its boundaries and limits. Models can never take the place, nor rise to the value and importance of those means provided in the dissecting-room. Some of you will remember how Prof. Shepherd in his introductory lecture emphasized the fact, that all anatomy had to be learned in the dissecting room. All other means, therefore, provided by a school of medicine must be looked upon as auxiliaries. They are to all intent and purposes the theoretical part of the subject and can only be neglected to the detriment of the practical, but this theoretical part without the practical is utterly useless to the surgeon. They are therefore eminently essential to each other and if any degree of importance can be attached to the one above the other, the practical part can be designated as "*Primus inter pares*."

We may then assert, without fear of contradiction, that since it has been shown that anatomy must be learned in the dissecting room, it is there that it must be taught. We have, therefore, to ask the question, "How and in what manner can this instruction be given to the best advantage?" The complicated instructions laid down by Cunningham, Ellis, and others would be almost meaningless without the aid of demonstrators, cutaneous nerves and the fine lines of demarcation between superficial and deep layer of fasciæ and aponeuroses would only too often be passed over unnoticed by the student but for the aid of the trained dissector. The presence, therefore, of demonstrators is most essential and the aid they render to the student of incalculable value. But craving the indulgence of my superiors, and those who are masters in the art of teaching, while I am still in *statu pupilari*, I beg to point out a want I experienced as a freshman and one which has undoubtedly been felt by many others.

The average freshman comes to his practical anatomy without any previous knowledge. He does not know the bony prominences and landmarks of the human body by the technical names. To him the "sternum" is the breast bone; the "clavicle" the collarbone, and the "oss innominatum" a thing undreamed of. It is therefore only, after much questioning and loss of time, that he learns the different points between which incisions are to be made for the reflection of the skin. He has much difficulty in discriminating between a nerve and an injected blood-vessel, and unless he has some knowledge of physiology, he may not know the difference between an artery and a vein. Even the

removal of fatty tissues without injuring the vessels embedded in it and the other muscles beneath it, cannot be done with skill. For these and many other reasons too numerous to mention there seems to be room here for some improved method. The one which seems to suggest itself is that of practical demonstration. A demonstrator might have a certain number of students allotted to him as a class, and before them he would carry out a dissection. The student by this means would gain much valuable knowledge which would enable him to carry out his own dissections to great advantage.

The advance of every science so sure and rapid will undoubtedly demand new methods of teaching this all important branch, and with the demand also bring the supply. To claim perfection for the methods in vogue at the present, would be to put an end to progress and advancement. That they are better than the methods of the past is without doubt, and it would not be too venturesome perhaps to predict that in time the penetrating power of the X-rays will be brought to such a state of perfection as to enable the student of anatomy to study the various parts of the human body *in situ* and with their life, the removal and withdrawal of which leave them in an abnormal condition.

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## PROPHYLAXIS OF INFECTIOUS DISEASES BY SERUMTHERAPY.\*

BY

L. D. MASON, B.A., '02.

In approaching such a subject as this, the first thing that must strike an observer is the wonderful change in medicine that this method of treatment—while yet in its infancy—has already produced. For years disease had been treated empirically, without the physician knowing why, or wherefore, certain drugs brought about certain results.

Wonderful advance had been made in surgery by the discovery of anæsthetics and later of the antiseptic and aseptic treatment of wounds. It was becoming an exact science. But medicine still remained greatly in the dark, as far as its healing methods were concerned. A writer once said:—"Medicine consists in pouring drugs, of which we know little, into bodies of which we know less," and the rebuke was not without foundation. Now, however, a new era seems to have dawned, and while not allowing our hopes to rise too high, nor making predictions of too rose-coloured a hue, we must admit that there will probably be a great advance in this form of treatment, that has already accomplished

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\* Mr. Mason's very excellent paper, of which the following is only a condensation, was read before the Undergraduates' Society, on Nov 16, 1900.

so much. Let us see what led up to these results:—It was recognized for centuries back that man suffered, as a rule, but once from certain diseases.

<sup>1</sup>An attack of smallpox, diphtheria or measles, if recovered from generally rendered the patient immune to that particular disease for the rest of his life. Early in the 18th century attempts were made to protect men from small-pox by inoculating them with material from the pustules of this malady. It was not until 1796, however, that vaccination, the salutary effects of which have since become world-wide,—was first introduced by Jenner. Nearly a century elapsed before the next great step forward was taken. In 1880, Louis Pasteur—whose discoveries in this branch of medicine have earned for him the title of “Father of Bacteriology,” as it is known and practiced to-day—proved that chickens could be made immune to chicken cholera by inoculating them with attenuated cultures of the specific germ of the disease. Numberless experiments by Pasteur, Koch, and others soon showed that animals could be similarly inoculated against anthrax. Studies upon the blood of animals, immune to certain maladies, were made as early as 1887 by Maurice Raynaud, and in 1888 by Richet and Héricourt.

The importance of such blood-serum was not recognized, however, until 1890, when Behring and Roux’s researches on diphtheria, and those of Behring and Kitasato on tetanus, showed that the serum, from an animal rendered immune, would protect a susceptible individual.<sup>2</sup>

In the words of Dr. Washbourn,<sup>3</sup> “The principle of Serumtherapeutics depends on the fact that the blood serum of animals highly immunized by artificial means to any bacterial disease, possesses the property of protecting other animals against the same disease, and this protection is afforded whether the serum is administered before, simultaneously, or after infection, provided that in the latter case, the disease has not advanced too far before injection is made.”

Of immunity itself and the various theories of its production, the limits of this paper will not allow me to treat at all.

I can only name some of the more important suppositions about its origin. Pasteur’s “Exhaustion Theory,” claimed that the bacteria died out, after a time, from want of suitable food, and so the individual became immune.

Chauveau’s<sup>4</sup> “Retention Theory” held that the germs produced material, prejudicial to their own growth, which accumulated in the system and finally stopped their development. Neither of these is now believed. Metchnikoff brought forward in 1884, the celebrated “Phagocytosis theory,” which is still maintained by some and which teaches that the white blood-cells destroy and literally devour the germs.



The mass of evidence tends to show that phagocytosis occurs only after other influences have acted injuriously on the bacteria. The probability of other factors being concerned was pointed out as early as 1891, by our own Professor Adami.<sup>5</sup> The belief now is, that, when the toxins or poisonous products given off by the germs in their growth enter the animal body, they stimulate the cells to increased activity, and these latter secrete a substance, termed an "antitoxin," which neutralizes the poison and prevents it from exerting its deleterious effects, while in the system. By injecting non-fatal, but gradually increasing doses of toxins into an animal, its blood may be made to contain so much antitoxin, that its serum introduced into another individual may not only prevent, but actually cure the same disease in him,—which latter effect requires the neutralization of large quantities of poison already in the body.<sup>6</sup>

And now let us see what are the practical results, of these researches:—The first great disease to be successfully encountered by this new form of treatment was that dread scourge and terror of mothers and children alike—diphtheria.

*Antidiphtheritic Serum.*—Klebs discovered the specific germ of diphtheria in 1875; Löffler confirmed his work. It was not until 1894 that Behring and Roux showed, at Buda-Pesth, the value of diphtheria antitoxin. For the following account of its preparation I am indebted to Dr. E. M. Houghton's admirable paper on "Antitoxins."<sup>7</sup>

Virulent cultures must be used in the immunising process. If mixed with other organisms they have to be isolated. To keep the germs in a high state of cultivation, they have to be transplanted daily into fresh bouillon, possessing an exact degree of alkalinity. The approved cultures are planted in large flasks of beef bouillon which are then placed in the incubator for seven days. The cultures are then filtered under strong pressure so that all the bacteria are removed. This leaves a clear brown fluid called diphtheria toxin, the virulence of which is so great, that 1-50 to 1-10 of a drop will kill a half-grown guinea-pig. Small initial subcutaneous injections of this toxin are made into selected horses 1-10 c.c. of toxin diluted with sterile saline solution to 1 c.c. is sufficient. The reaction varies greatly with the animal taken; some horses show no local or general reaction, others are prostrated. The variabilities and difficulties in this connection are said to be "well nigh distracting." After a considerable length of time the animal can resist large quantities of toxins, a definite quantity of blood is drawn from the jugular vein, under aseptic and antiseptic precautions into sterilized vessels. The clot contracts and squeezes out after some hours, the straw-coloured serum which contains the antitoxin. This serum is placed in a sterilized container; some preservative, *e.g.* cam-



phor or weak carbolic solution is added, and it is allowed to stand. It is then filtered, the most complete asepsis being observed throughout.

The strength of the antitoxin has now to be tested. This is done by injecting a mixture of ten times the fatal dose of diphtheria toxin with variable quantities of the serum, into a series of guinea-pigs. Thus the force of the antitoxin is gauged by the amount required to protect these animals from all ill effects of the poison.

An "antitoxic unit" is ten times the quantity of serum necessary to guard a medium sized guinea-pig against ten times the fatal dose of diphtheria toxin. Thus, if 1-20 milligramme (1-20000 cc.) of serum protects against 50 milligrammes of a toxin, the fatal dose of which is 5 mg., the unit here would be 1-2000 cc., or each cubic centimetre would contain 2000 immunizing units. The finished and tested product is now put up in tubes and labelled with the number of units it contains. Some firms send out various grades of serum, using tubes that hold from 2 to 20 cc. of fluid.

Others never allow the latter to exceed 5 cc., no matter how many units it contains. Will the serum keep? And if so, how long? If it has been properly prepared there is no danger of its putrefying, but, as it is a complex albuminous body, it tends, as soon as made, to break up and so deteriorate. Manufacturers however, generally add sufficient excess of serum to insure the full number of units claimed on the wrapper, being present at the end of six months. It should be kept in a cool dark place. And now we come to the administration of the antitoxin. It is introduced by subcutaneous injection. The most rigorous asepsis is here absolutely necessary. The greatest care is needed in handling the serum. It should be of thoroughly reliable make; it must not be left long exposed to the air.

Dr. Washbourn<sup>3</sup> reports two instances at least of death recorded from the use of contaminated antitoxin. And as the physician holds a serious and responsible position in this matter, absolutely clean and sterile instruments must be used. The skin should be washed with soap and water, and then a 1 in 20 carbolic solution applied. The syringe ought to be boiled before use. The above quoted authority recommends in the selection of this instrument, that one, which can be so treated, should be got; the pistons ought to be made of rubber or asbestos, and the joints made tight with washers of the same material. No cement should be in the joints. The best site for injection is said to be the subcutaneous tissue of the flank. Into the treatment of the disease itself, I cannot go further than to say, that, "the dosage depends on the severity of the disease rather than the age of the patient."<sup>8</sup>

In all cases, the first twenty-four hours is the period when the bulk of the serum should be injected. During this period, 2, 4 or 6

injections should be given in mild, moderate, or severe attacks respectively. For the next two days, one, two, or three injections may be given daily. If the patient shows no improvement after three days, no benefit is likely to result from further injections. About 4000 units is an average dose for injection." It is important to give it early, and to remember that one good sized injection is vastly superior to small ones.

Dr. Washbourn shows that in cases of tracheotomy for diphtheria in children under 5 years of age at Guy's Hospital, London, the total mortality for the years in which antitoxin was not used, viz., from 1887, 1894 was 76.7 per cent.; while that of the antitoxin years 1895, 1897 was 28.2 per cent.

Now let us examine what concerns us most at present, viz.:—*The Prophylactic power of Diphtheria Antitoxin.*

Klein<sup>8</sup> said of this, "The chain of symptoms constituting true diphtheria in man is primarily caused by the growth and multiplication of diphtheria bacilli in the affected mucous membrane; by this growth and multiplication certain metabolic products result (diphtheria toxins) which are absorbed into the system and give rise to the constitutional changes that characterize diphtheria, so that local inflammation and necrosis caused by them is one thing; the absorption and action of their toxins in the body generally, is another. The serum of diphtheria-immunized animals, can neutralize diphtheria toxins and also counteract the growth and multiplication of the bacilli themselves. The higher the antitoxic and immunising power of such serum, as tested on the animal,—the greater the neutralization in diphtheria in the human subject, of the toxin already circulating in the affected body; and the greater the arrest of further multiplication of diphtheria bacilli in the affected mucous membranes, i.e., the disease will be cured." If the serum is injected too late after infection, it has no protective power whatever,—no matter how large the dose, for at this stage the individual is suffering from the results and not the direct action of the bacteria and their toxins. It is against the latter alone, that the serum can act.

The great drawback to its general use as a prophylactic, is the brief period that the immunity lasts. But instances are recorded<sup>9</sup> where epidemics in schools were apparently stopped by injecting the antitoxin into all the inmates.

Dr. Washbourn<sup>8</sup> says that "Its use is confined to cases, which have been definitely exposed to infection. When one or two children in a family are attacked with diphtheria, it may be advisable to treat the other children with the serum. Personally, I prefer to have the throat systematically examined for diphtheria bacilli and to use the antitoxin immediately they are found."

Dr. Park,<sup>4</sup> however, of the New York Health Department, states that the inspectors of this department immunised from January 1st, 1895 to January 1st, 1900, 6,506 cases with diphtheria antitoxin, of which cases 55 developed the disease without fatal results. Among these 6,506 persons—mostly children and most directly exposed to diphtheria, no fatal cases developed within thirty days, with the single exception of one patient who had scarlet fever as well. He says "Let me also recommend its use in all suitable cases for immunisation. It gives us a guarantee of at least two weeks of safety and this can be lengthened at will by repeating the dose."

Dr. Shurly<sup>10</sup> of Detroit goes even further. After deploring the ravages of diphtheria, especially amongst the poor of our large cities, he recommends the general adoption of a prophylactic dose of antitoxin to every child of croup age, viz.: under ten years exposed to diphtheria. He believes this is the chief remedy to diminish the mortality. The use of this preventive is especially indicated in the presence of adenoids and enlarged tonsils. He advises the early administration of the serum, without waiting for bacteriologic diagnosis. Antitoxin employed twelve hours or more prior to operative interference, will reduce the mortality of intubated cases at least 50 per cent.

These are the advantages that certainly ought to enhance its value, but, does it cause any injurious effects?

Dr. Washbourn<sup>3</sup> claims that several cases are recorded in which fatal collapse has occurred immediately after the injection of the antitoxin. He says that similar results have followed the subcutaneous injection of morphia. This, however, is most uncommon and not by any means the difficulty met with in its use. Writing five years ago, he remarked that the injection of antitoxin frequently caused an eruption, and sometimes pain in the vicinity of joints. These symptoms usually appeared a week after injection. The eruption was generally erythematous or urticarial and might be uniformly distributed, or, confined to a particular part, *e.g.*, extensor surfaces of the limbs. The eruption was accompanied by pyrexia—the temperature sometimes reaching 104° Fahr. The pains in the joints were less common, while at times there was effusion into the latter. These complications passed off after a few days, and while none proved fatal, still naturally they were most undesirable. They were thought to be due to something else in the serum besides the specific therapeutic body.

In fact Klein<sup>3</sup> had a serum dried by evaporation for him, which kept indefinitely its antitoxic and immunising action; this he diluted with a definite amount of water and used for injection. He found that the rash, as a rule, did not appear with this, and so thought that the



substance which caused it was insoluble in water. This objection to the use of antitoxin, however, still exists to a slight extent to-day.

Dr. Spronck<sup>11</sup> of the University of Utrecht claims that it is proved by statistics that heating the serum for a time, at a lower temperature than will destroy its curative power, causes it to lose some injurious property which otherwise produces a rash and the other complications.

Dr. Wright<sup>12</sup> states that in 268 cases of diphtheria treated by him with antitoxin, the only disagreeable effect caused was the production of a localized painful spot in the vicinity of the place of inoculation. He never observed pain in the joints. Urticaria often followed its use in the earlier cases, but since the antitoxin has been produced in a more concentrated form he has never seen it. So we may justly conclude that its benefits far outweigh the temporary distress that may in some cases follow its use.

The next form of therapeutic serum to be discussed is the *antitetanic serum*. Kitasato in 1889, discovered the specific germ of tetanus. Behring and others in 1892, succeeded in immunising horses and used their serum in man. Prof. Roux believes that the action of this particular antitoxin is upon the tissue cells, which it fortifies against tetanin—or the poison of this germ.

“This explanation,” says Dr. Geo. W. Cox of Chicago,<sup>13</sup> “clearly accounts for the wonderful immunising properties known to exist in the antitetanic serum, and is the strongest possible appeal for the use of this agent as a preventive. Not a single case of tetanus has ever developed after an adequate prophylactic dose of a reliable serum was given.” This fact was proved in hundreds of cases at the Pasteur Institute in 1895. Preventive injections are strongly recommended by numerous writers, in the case of suspicious wounds, such as those soiled with earth, especially in those places where the disease is known to be endemic. For this purpose 10 cc. of the serum given two or three times at intervals of as many weeks, have been suggested.<sup>8</sup> Treatment of the disease, when once manifested has been unsatisfactory, because tetanus is only recognised when the toxic effect has been produced. The convulsive stage corresponds to the paralytic stage in diphtheria and at this time it is too late to counteract the poison’s deadly work.

*Antistreptococcic serum* is another kind, which was first prepared by Marmorek. Its results are most perplexing, due probably to<sup>8</sup> the difference in virulence and condition of the germs themselves. Some uphold its benefits in erysipelas and puerperal septicæmia. Where this germ gives rise to complications in scarlet fever or diphtheria, the use of this serum seems to lessen the severity of these diseases.

Sera have been prepared for the treatment and prevention of typhoid, cholera, smallpox, rabies, tuberculosis, pneumonia, and yellow fever.



While some have been undoubtedly failures, it is premature to pass judgment on most of them, as they are yet in the experimental stage.

There is one other kind which I wish to mention before concluding and which, as tried in Portugal last year, cannot be declared a decided success. This is the

*Antibubonic serum*<sup>14</sup>—Yersin of the Pasteur Institute and Kitasato, about the same time, in 1894, discovered the germ of plague. A serum was prepared after various trials. When the disease broke out in Oporto in 1899, in 142 cases treated with this remedy there was a mortality of 14.78 per cent.; in 72 not treated there was a mortality of 63.72 per cent. It must be given early and in sufficiently large doses. Intravenous injection is the best method. The envoys of this Institute gave as much as 40 cc. at a time. The veins of the hand or wrist were selected, the serum was raised to body temperature, the needle introduced under the sterilized surface of the skin, directly into the blood-vessel, and three or four minutes were taken to inject the fluid. A drop of collodion closed the wound. Prophylactic injections were successfully tried on about 600 persons. Immunity was found to almost immediately follow, but it was short-lived, scarcely lasting more than 15 days, when, however, it could be reproduced by a fresh injection.

The future seems bright for this form of treatment. Though there have been, and will be, no doubt, failures, still victory is often learnt through defeat. The value of the proverbial "ounce of prevention" is well known, and here, where we can accurately measure our ounces and employ them intelligently results will probably follow, as beneficial as they are now ardently desired.

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TYPHOID FEVER: SIGNS POINTING TO A PROBABLE  
PERFORATION OF THE BOWEL: OPERATION,  
ABSENCE OF PERFORATION OR ANY  
LESION OF PERITONEUM.\*

BY

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It is a common saying that we learn as much from those occasions on which we are mistaken as from those on which we are right. The following case, I think, illustrates this sufficiently well.

H. C., 39 years of age, unmarried, returned, on October 7th, to Montreal from a ten days' trip to New York. She was in her usual health until October 11th, when she began to have pains in her bones and felt miserable. There was no improvement the next day, and during the afternoon of October 13th she complained of headache and chilliness. On the evening of the same day she felt feverish, and had nausea with a little vomiting. There was no epistaxis. She had no appetite, but great thirst, and the bowels were constipated.

I saw her for the first time on October 15th. At that time the face was flushed, the tongue coated in the middle, the temperature  $102^{\circ}$  F., and the pulse about 100. There was otherwise nothing to be made out by physical examination, but suspecting typhoid fever, I advised her removal to a private ward in the hospital, in case baths would have to be given. She was removed to the Montreal General Hospital on October 16th. Widal's reaction was present on October 17th and 18th, the diazo-reaction on October 18th, disappearing the next day.

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\* Read before the Montreal Medico-Chirurgical Society, Nov. 30, 1900.

From the fifth to the seventeenth day the course of the illness was uneventful. For a week the temperature ranged from  $103^{\circ}$  to  $104.5^{\circ}$  F., then from  $104^{\circ}$  to  $105^{\circ}$ , (once reaching  $105.6^{\circ}$ ). The pulse was at first 100, then 110 to 116. Typical rose spots appeared on the thorax and abdomen, and the spleen became distinctly palpable. The bowels were constipated and the abdomen relaxed and natural. The only symptom was nausea, which, however, did not interfere with the taking of a fair amount of liquid nourishment. The patient's mind was clear, except for a little wandering at night occasionally, and the amount of sleep averaged between five and seven hours. Baths at  $80^{\circ}$  F., lowered to  $70^{\circ}$  F., were given every three hours if the temperature reached  $102.4^{\circ}$  F., and these she bore very well. There was a "urinary crisis" on the 14th, 15th, and 16th days of the illness, the quantity voided on these days being, respectively, 54, 65 and 90 ounces, the average up to that time being 30 ounces.

On October 28th, the 17th day of the disease, she had a bath at 10 a.m., and one hour later complained of severe pain in the lower part of the abdomen, to relieve which an ice bag was applied. At 2 p.m. she had another bath, lasting only five minutes. The pain still continuing, I was notified of the fact and immediately came to see her. I found her looking rather anxious and with a somewhat pinched face. She complained of a good deal of pain in the abdomen, but had no special nausea and no vomiting. There was a little blueness of the finger nails, due to the bath administered half an hour before. The temperature was  $104^{\circ}$  F., and the pulse 120, rather full and hard. The abdomen was a little distended symmetrically in its lower half, and there was distinct sensitiveness in the right lower quadrant, about the situation of the appendix. There was certainly no rigidity of the abdomen, rather a doughy feel, and the liver dulness was within the normal limits. The white corpuscles were counted and found to number 17,000 per cub. mm. Feeling uncertain as to whether perforation of the bowel had occurred or not, I asked Dr. Armstrong to see the patient, and at 4 p.m., we made a joint examination of the case. A second blood count at this time gave 10,500 leucocytes per cub. mm. The abdominal condition remained the same as above. It was decided to await further developments, and at 6 p.m., a third blood count showed 10,500 leucocytes. I saw the patient again at 9 p.m., and finding the condition unchanged, with the exception that the abdomen seemed a little more distended in the lower zone, I asked Dr. Armstrong to see the patient once more. We came to the conclusion that a perforation was probably present though there was no rigidity, and as ten hours had now elapsed since the onset of the symptoms, we both

felt that if anything was to be done, it would have to be done now. It seemed on the whole more prudent to take the risk of what might turn out to be a purely exploratory operation, than to wait longer until the time for successful intervention would be past.

The patient was accordingly removed to the operating theatre about 10 p.m., and under ether, Dr. Armstrong made an incision about three inches long in the median line about one inch below the umbilicus. On opening the peritoneum, no fluid or gas escaped, and the surface of the bowel seemed normal. Thickenings in the course of the lower part of the ileum, due to the typhoid ulcers, were distinctly felt, but no perforation could be found, or even any sign of local peritonitis. In the angle formed by the junction of ileum and cæcum, there were two very red lymph glands, the size of large hazel nuts, swollen, it seemed, almost to the point of rupture, and standing out prominently from their peritoneal investment. Two quarts of warm normal saline solution were introduced into the peritoneal cavity, after the bowel had been returned, and the abdominal wound was closed. During the operation hypodermics of camphor and strychnine were given, as the pulse was very rapid and weak. Recovery from the operation was uneventful, with exception of a sharp attack of bronchitis with muco-purulent expectoration. From the 33rd to the 41st day of the illness, there was a slight recrudescence of the fever, and November 21st, the patient left the hospital for her home where she made a complete recovery.

I have dwelt at some length upon the details of this case, as it offers a good example of the difficulties that underlie the diagnosis of perforative intestinal lesions. In many instances the diagnosis of perforation is comparatively easy, but many instances occur, such as I have related, in which there seems to be a reasonable probability of perforation. What are we to do in such cases? There seems to be two alternatives—on the one hand to await developments, until possibly the symptoms disappear and the condition is proved not to be a perforative lesion of the bowel, or until absolutely unequivocal signs of perforation and possibly of general peritoneal infection occur, when operative intervention will be too late—or, on the other hand, to operate immediately, even though there may be a reasonable doubt as to the perforation, and the intervention may turn out to be of the nature of an exploratory operation. I believe the latter course to be the proper one, and that the risk should be assumed, provided that skilled surgical assistance can be obtained. On future occasions I shall certainly lay more stress upon the presence or absence of rigidity of the abdominal walls in the diagnosis of perforation in typhoid fever, which is such a valuable sign in perforative appendicitis. I confess I was disappointed by the as-



sistance given by frequent leucocyte counts in this case. I had been led to believe, from a study of recent literature on the subject, that a high leucocyte count was very strong presumptive evidence in favour of perforation in typhoid fever. It is true that before the first count in this case the patient had just had a bath, and the circulation in the extremities was possibly sluggish, which might account for the increase in the white cells. The subsequent counts, however, were still considerably above the normal, especially for typhoid fever. I regret that no count had been made before the onset of the symptoms suggesting perforation, as we should then have had an actual standard of comparison.

## TYPHOID FEVER OPERATED ON FOR PERFORATIVE PERITONITIS—WITH NEGATIVE FINDING.

BY

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Since abdominal surgery has made such advancement as marks its present state, operative measures to prevent the almost inevitable lethal ending of perforation of the intestine in typhoid fever are being adopted more and more frequently. While it is true that the results, for obvious reasons, so far achieved in this operation, are not to be compared with those in the cases of perforated gastric ulcer or traumatic perforation, yet they are such as warrant the careful consideration of operative measures in all cases and their adoption in most.

The early diagnosis of intestinal perforation in typhoid fever is of the greatest importance, for there is little hope of obtaining good results in any case of peritonitis after it is well advanced. The difficulties of diagnosis incident to all abdominal conditions, are not infrequently many times increased by the tympany which exists in the course of typhoid fever, as well as by the mental state of the subject ; and most clinicians have cast about for some definite data from which an accurate diagnosis may be made. The chief signs and symptoms of this complication, namely, severe and sudden abdominal pain with tenderness and rigidity of the parietes, vomiting, collapse and rapid pulse, are not by any means constantly found, inasmuch as the abdomen may be flat, or the pulse may not be considerably altered, and signs of collapse may be wanting. Even pain may not be complained of. The value of the sign of the obliteration of the liver dulness, it would appear, has been over estimated by some in making this diagnosis, since in not a few non-perforated cases with tympany, the liver dulness could not be made out.

When other complications of typhoid productive of a leucocytosis can be excluded, a marked increase in the white corpuscles in the presence of signs of peritonitis, has been regarded as of value ; but this sign cannot be depended upon. With the hope born of the experience of 20 per cent. of recoveries in Keen's series of 83 cases, and 21 per cent. in Finney's 112 cases, every case where signs of perforative peritonitis appear, should be most carefully observed with a view of operative interference. The difficulty of accurate diagnosis is in some

instances so great, that little wonder arises when a mistaken diagnosis is made from time to time. A non-perforated case of typhoid fever operated on has a far better chance of life than a perforative case left alone.

The following case is recorded as one in which a diagnosis of perforation was made, but on operation no perforation was found. Briefly summarized, the report is as follows :—

L. W. St. L., male, aged 18 years, fell ill on December 5, 1900, with headache, dizziness, and general malaise. These symptoms were increasingly severe and troublesome during the next week and, after three days in bed, the patient was admitted to the Royal Victoria Hospital on December 15, 1900.

His condition on admission was that of one with mild typhoid fever, the pulse 100, temperature 102° F., respiration 26. There was slight abdominal distension with tenderness of the left upper quadrant. Rose spots appeared on the following day when the Widal reaction was also present. He was given the bath treatment, but after the fourth bath was taken it was decided to adopt sponging, as he shivered a great deal and often left the bath with weak pulse and cyanosis.

On the evening of December 29th, on the fourteenth day of the disease, he complained of pain in the abdomen, the onset of which was not sudden and which was not attended with collapse, and was more intense over the left side, where the tenderness was most marked. He suffered with increasing intensity throughout the whole of the 20th, diarrhoea being present. On the morning of the 21st (2 a.m.), abdominal pain was very severe, the parietes rigid, with marked tenderness in the left lower quadrant. Liver dulness was obliterated, the pulse 104 to 120, the temperature showed a tendency to rise from four the previous afternoon until the time of examination. In consultation with Dr. Garrow, it was decided that an operation was indicated, as a perforation was believed to have taken place. An examination of the blood made after deciding to operate showed 14,000 leucocytes.

The operation was performed at 4.30 a.m. on December 21st. On opening the abdomen by a median incision below the umbilicus some clear, reddish-coloured fluid was found free in the peritoneum. No inflammatory lymph was seen. The vessels in the visceral peritoneum were turgid and several mesenteric glands were enlarged and deeply congested. The bladder contained twelve ounces of urine. There was no evidence of perforation. The wound was closed with silk worm gut sutures without drainage and the patient made an uninterrupted recovery, the temperature becoming normal on the 28th day of the disease.

## CASE REPORTS—WITH SPECIMENS.\*

BY

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### **Resection of the Colon.**

A. C., aged 30 years, farmer, had always enjoyed good health until October, 1899, when he began to have some obscure pains in the upper part of the abdomen, which were attributed to indigestion. In May, 1900, he had an attack of severe pain in the lower zone of the abdomen, which lasted for three or four days and which was thought to be appendicitis. After this attack a lump was discovered in the appendix region, and throughout the summer he was not able to do hard work and had occasional attacks of pain, but there was no complaint about the digestive functions.

He was admitted to the Royal Victoria Hospital on the 10th of September, 1900. He had lost ten pounds since May (from 153 to 143 pounds). On the 12th of September an incision was made over the tumour and its character made out. The wound was closed without any attempt at removal, as had been agreed with him in case of the condition requiring a serious operation. On the 22nd of September, his consent having been obtained, the mass was removed. The mass included the whole of the cæcum and ascending colon and three-fourths of the transverse colon, with masses of glands from the mesocolon and gastrocolic omentum. The lower end of the ileum was attached to the distal end of the transverse colon by Maunsell's inversion method. A rubber drainage tube was left in the abdominal wound for two days, and then a piece of iodoform gauze was used instead. Everything went well until October 3rd, when the discharge became more abundant. On the 7th of October there was free bleeding through the drainage wound. This continued at intervals, and on the 8th there was found to be a large collection of blood within the abdomen. The patient was weak and in a poor condition, but the wound was reopened and the clots removed. The wound was left open and packed with iodoform gauze. No special bleeding point was discovered, although a couple of points in the omentum close to the stomach were ligated. He made a good but slow recovery as the wound suppurated, and he was discharged on the 26th of November. Recent reports are to the effect that he is well and gaining in flesh. It

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\* Read before the Montreal Medico-Chirurgical Society, January 11, 1900.



is said that three members of his mother's family died at an early age from intestinal tumours.

*Case II.*—J. M., aged 45 years, was admitted to the Royal Victoria Hospital on January 8th, 1901. He had always been a strong and healthy man (with the exception of the loss of his eyesight through an accident with molten lead several years ago) until April last, when he began to suffer more or less from a sense of fulness after eating. There were no other symptoms until August, when pyrosis was added, and about three weeks before admission he noticed a hard, movable, painless tumour in the right lower quadrant of the abdomen. He had never suffered from any intestinal symptoms nor from any digestive symptoms except those above noted. His bowels were regular and his general health good. He had not lost weight appreciably. There was no tubercular heredity.

On examination, a tumour as large as a goose egg was seen and felt lying normally in the region of the so-called McBurney's point. It lay close to the abdominal wall; was hard, irregular and painless, and freely movable within an area limited by the middle line internally, and a line about two inches above and another about two inches below the level of the umbilicus. It was clearly not a kidney and could be definitely diagnosed to have no connection with the stomach or gall-bladder. It was clearly either omental or cæcal.

On January 10th, the abdomen was opened over the mass, external to the right rectus muscle, and it was found to be a cancerous growth of the cæcum. It was definitely limited to the cæcum, and there were no enlarged glands except several small shotty masses in the mesentery of the lower part of the ileum. The mass was removed and the lower end of the ileum attached to the colon by Maunsell's method. As only a little more than twenty-four hours have elapsed since the operation in this case I can only say that he is doing typically well.

[The patient has since made an excellent recovery.]

The following is the pathological report by Dr. E. Archibald:—The tumour involved about half of the ascending colon with the hepatic flexure and about two or three inches of the transverse colon. Ulceration has gone on so much, hand in hand, as it were, with overgrowth, that in spite of considerable contraction the lumen has not become materially occluded. Histological sections show the growth to be a carcinoma in which there can still be made out some attempt at preservation of the adenomatous type; that is, one sees here and there an indication of—more or less abortive—tube-formation, lined by several layers of roundish or oval cells, the deepest of which, however, retain the columnar shape. Anaplasia, according to Hausemann's ideas, has not reached its limit.

The second case represents a small, round-celled sarcoma of the cæcum. It is about the size of a Tangerine orange, and involved the concavity formed by the junction of the ileum and colon, bulging out towards the mesenteric side. It rose evidently in the wall of the cæcum, inasmuch as the mucosa was intact save for one small spot of ulceration, while the mucosa was not broken through. Sarcoma of the intestinal tract are rare, but such as do occur choose most frequently the cæcum for their seat. The tumour, histologically, offers nothing of special interest.

### **Osteomyelitis—Amputation.**

*Case I.*—E. R., aged 31 years, was admitted to the Royal Victoria Hospital on June 11, 1900, with a history of an acute illness without injury thirteen years before, with pain over the lower part of the thigh. Flexion to an angle of 45 degrees occurred at this time, and motion became very limited, even up to the degree of extension. It was incised and pus evacuated, and nine years ago a sequestrum was removed but this did not improve his condition. For the past nine months he has suffered a great deal and was unable to put much weight upon the limb. There was decided albuminuria but no casts. The thigh was amputated in the middle third on the 23rd of June, 1900.

*Case II.*—A. J. McL., aged 43 years, was admitted to the Royal Victoria Hospital on July 1st, 1900, with a great enlargement and tenderness over the whole femur, and a slight ankylosis in a flexed position of the knee joint. He was a strong, rugged backwoodsman and had injured his thigh by a blow against the picket of a fence in July 1899. There was no wound produced, but swelling began in the middle of the thigh about the end of July with shooting pains, and had continued up to the time of his admission to hospital, disabling him from work all this time. On the 24th of July, the thigh was incised freely, pus evacuated, and sequestra removed from different portions of the bone. Subsequently the wounds were reopened but nothing found. Pain continued, and as there seemed no prospect of a satisfactory result, the thigh was amputated by circular method, November 26, 1901. The upper portion of the femur remaining in the stump was also diseased and contained a sequestrum which was removed, leaving a cavity from the trochanter to the end of the bone. It is probable that this piece of bone will have to be removed before the patient can be considered quite well.

*Case III.*—H. S., a delicate looking boy, of 11 years, was admitted to the Royal Victoria Hospital on November 20, 1900. The early history of the attack could not be obtained in any satisfactory manner, but the acute onset dated from October 22nd, although the trouble was attributed to an abraded heel from a badly fitting boot, which abrasion

had occurred on the 15th of September, 1900, and had been quite healed some time before the onset of serious symptoms.

He became seriously ill with fever, pain, and swelling of the whole leg (left.) Multiple incisions were made on the 29th of October, and on the 22nd of November, under ether, the whole diaphysis of the tibia was found bared of periosteum and bathed in pus. There was also separation of the upper epiphysis. An attempt was made to drain the leg with the hope of saving the limb, but the patient did not do well, and on the 18th of December the limb was amputated through the condyles of the femur.

All of these cases made uninterrupted recoveries.

The pathological report, furnished by Dr. Edward Archibald, is as follows :—There is here a series of four bones, illustrative of bone inflammation. Of these, three show the results of long-standing, chronic trouble, the other shows a very acute condition. The three are all femora and are very good examples of chronic osteomyelitis, showing as they do, very beautifully, the conditions of osteosclerosis and osteoporosis, which occur so regularly side by side in this disease. In one case the sequestrum was partly intra-articular in the knee. New formation of bone is also well seen.

These bone fragments of the fourth case represent the tibia of a child of eleven. In the fresh specimen both upper and lower epiphyses were entirely destroyed, each articular end being represented merely by a sort of stalactitic framework of bone spicules, in the interspaces of which lay a great deal of dirty, sloughy tissue, largely purulent. In a number of stained smears of the pus, no tubercle bacilli but only staphylococci could be found. The inflammatory process extended from either epiphysis two or three inches along the shaft. The articular cartilage was not perforated at either end, although there were evidences of some inflammatory exudate in both joints.

An interesting point in the case lies in the site of the infection. Text-books teach that in children the majority of tuberculous infections begin in the epiphyses, while the majority of pyogenic infections involve first some portion of the shaft. In the present case the contrary is true—a staphylococcus inflammation evidently arising simultaneously in both epiphyses and involving the shaft only secondarily by contiguous extension.

# A REPORT ON THE CASES OF TYPHOID FEVER ADMITTED INTO THE ROYAL VICTORIA HOSPITAL DURING 1900.

BY

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During the year 1900 there were treated in the wards of this hospital 151 cases of typhoid fever, 76 males and 75 females. Of these cases 127 were treated to a conclusion, 10 were taken out by friends before the disease had entirely subsided, and 22 are still under treatment. The latter are not included in the present report.

The mortality was not so high this year as last although the disease during the past four months has been unusually severe. There were in all ten deaths, *i.e.*, 7.7 per cent. Death resulted in three cases from perforation, in three cases from hæmorrhage, and in four cases from profound intoxication, and in one of the last, acute lobar pneumonia was also present. On an average the patients were admitted on the seventh day of the disease.

The following data are the points of interest :—

**Age.**—The average of all the patients was 24 years, the youngest being 2½ years old and the oldest 61 years. Arranged in decades they are as follows :—

|                        |    |
|------------------------|----|
| Under 10 years .....   | 11 |
| Between 10 and 20..... | 35 |
| “ 20 and 30.... ..     | 55 |
| “ 30 and 40..... ..    | 21 |
| “ 40 and 50 .....      | 4  |
| “ 50 and 60 .. .. .    | 2  |
| “ 50 and 60 .. .. .    | 2  |
| “ 60 and 70.. .. .     | 1  |

**Season.**—The largest number of cases were admitted during the month of June, the smallest during March.

|                                   |                |
|-----------------------------------|----------------|
| April, May and June .....         | 34.1 per cent. |
| October, November, and December . | 30.3 per cent. |
| July, August and September. . . . | 24.8 per cent. |
| January, February and March ....  | 10.8 per cent. |

**Duration of cases.**—The average number of days in the hospital was 37.5.

The average duration of the fever was 25 days.



The longest period of fever was 64 days, which occurred in two cases.

The shortest period while under observation was six hours.

The patient came in on the seventh day of the disease with a temperature of 100°F., which steadily declined to normal and remained so until the day of discharge.

**Infection.**—In two cases milk was regarded as the source of infection.

Three patients were admitted from one house and a fourth also contracted the disease at the same time.

In one case the patient had been nursing her son through a severe attack of typhoid.

Defective sewage was present in the homes of two cases.

**Symptoms : Onset and Course.**—

In 96 per cent. of the cases the onset was gradual, the most frequent symptoms being anorexia, general malaise, frontal headache, pain in the back and limbs, and chilliness. The first three, *viz.*, anorexia, general malaise and frontal headache were by far the most frequent.

In one case the onset was sudden, the patient having to take to bed immediately; in another the onset simulated pneumonia. A definite rigor occurred at time of onset or during the first week in 12.4 per cent of the cases. In one case chills were frequent during the course of the disease.

Diarrhoea was present at the time of the onset in 25.6 per cent. of the cases, and occurred at some time during the course of the disease in 27 per cent. of the cases.

Vomiting was present at the onset in 26.3 per cent. of the cases. In 13.9 per cent. it occurred during the course of the disease.

Delirium was present during the onset or course in 13.2 per cent. In all except one case it was of a low muttering character. At present there is in the hospital a case of acute mania complicating typhoid fever, occurring during the course of the disease.

Epistaxis occurred during the onset in 24 per cent.

One case was under observation from the first day of the disease, the patient having been admitted to the gynæcological ward 14 days previously.

**Eruption.**—The characteristic “rose spots” were present in 69 per cent. of the cases. In one case the limbs and trunk were covered with a polymorphous rash, composed of macules, papules and petechiæ. In two cases a diffuse erythema was present; and in four cases a purpuric rash appeared.

The earliest appearance of the rash was on the third day of the disease.

The latest appearance of the rash was on the 69th day, being present only during a relapse.

The shortest duration of the rash was two days. The longest duration was 28 days; the average duration was twelve days.

*Spleen.*—The spleen was palpable in 61.2 per cent. of the cases. The fourth day was the earliest in which the spleen was palpable. In one case it was not palpable until the 31st day of the disease. On the average the spleen remained palpable for fourteen days. In two cases the spleen was palpable only for four days. In one case it was palpable for 29 days.

*Relapse.*—A definite relapse occurred in 5.4 per cent. of the cases.

The longest duration of the relapse was 22 days.

The shortest duration of the relapse was 11 days.

The average duration of the relapse was 16 days.

In one case the relapse was more severe than the original attack.

In one case the patient had been discharged from the hospital three months, previously having recovered from an attack of typhoid fever. In only one other case was there a previous history of typhoid fever.

*Fever.*—The highest temperature recorded in any of the cases was 105  $\frac{4}{5}$ ° F.

In one case the maximum temperature was 100°.

The average maximum temperature was 104.1°.

The temperature reached 105° or over in 4.7 per cent. of the cases.

**Complications :** *Digestive System.*—Meteorism was present in 20 per cent. of the cases.

Jaundice was present in two cases; in one of these definite evidence of cholecystitis developed three days later.

Perforation of the bowel occurred in four cases. In another case perforation was simulated very closely but exploratory laparotomy showed no evidence of such.

The following is a synopsis of the case :—

Patient was admitted on the fifth day of the disease suffering from frontal headache, malaise and anorexia. The temperature varied between 102 and 104°. A diffuse rash developed on the tenth and the eleventh day of the disease, and on the eleventh day the Widal reaction was positive. Spleen was not palpable at any time.

On the 15th day of the disease the patient complained of abdominal pain during the course of the day, and in the evening it increased in severity. On examination, there was great tenderness, more marked over the left inguinal region and slight rigidity over this area. There was slight increase in distension and the liver dulness was obliterated. The temperature curve was unaltered, 102.4 to 103°. The pulse rate was not increased more than it had been, 98 to 104. Six hours later the pain was more intense and general throughout the abdomen; tenderness

was marked all over the abdomen, more so on the left side, and distension slightly increased. Rigidity was present over the lower part of the abdomen and liver dulness obliterated. Temperature and pulse remained unchanged. Operation was decided upon with the above mentioned result.

In three cases of perforation death resulted. In one case, still in hospital, operation was performed within 17 hours of the time of perforation, which occurred on the 12th day of the disease. The patient is up to the present time, 12 days after the operation, doing well.

Intestinal hæmorrhage occurred in 12 cases. In two which were fatal it was only an evidence of a general hæmorrhagic disposition of the disease. In three cases hæmorrhage was the direct cause of death. In eight cases recovery ensued.

*Circulatory System.*—In 11 cases systolic murmurs were audible during the course of the disease, but disappeared previous to discharge in all but one case.

In five cases the disease was complicated by chronic endocarditis.

In two cases acute dilatation of the heart occurred.

In seven cases femoral phlebitis occurred, in five on the left and two on the right side. In one case brachial phlebitis occurred.

*Respiratory System.*—Acute bronchitis was present at onset in 18.5 per cent. of the cases, and developed during the course of the disease in 11.6 per cent.

Two cases of pleurisy with effusion developed, and two cases of dry pleurisy also occurred.

Tuberculosis was present in one case.

Acute lobar pneumonia was present in two cases.

In one case, bronchitis, broncho-pneumonia and pleurisy occurred during the course of the disease.

*Other Systems.*—Hæmaturia occurred in the two cases of hæmorrhagic typhoid.

Febrile albuminuria was present in 10 per cent.

Acute nephritis developed in three cases.

Suppurative otitis media developed in four cases. In two, in which a bacteriological examination was made, staphylococci only were present.

Abscesses occurred in six cases.

Periostitis occurred in three cases. In one case it developed on the 24th day.

Arthritis developed in one case.

In two cases the disease was present in epileptics. Fits increased in number and severity in one case after the fever subsided, in the other no attacks occurred while in hospital.

Superficial gangrene developed in two cases.

Tender toes occurred in ten cases.

*Widal Reaction.*—This test has been employed in all cases but the result is not stated in four cases. In only one case was it negative throughout the course of the disease. In one case the reaction appeared on the fourth day, and in another it was not positive until the 33rd day of the disease.

The reaction was tried in 96 cases on the day of discharge from the hospital and was found present in all but six.

Erlich's reaction was found present in 34 per cent. of the cases.

### **Synopsis of Nine Fatal Cases.**

*Typhoid with Obstinate Pyrexia, Marked Cardiac Weakness, Death.*

*Case I.*—D. O'G., aged 13, female. (Case No. 4892.)

The patient was admitted to the hospital on April 24, 1900, complaining of headache, loss of appetite and general malaise. The latter had been present for about two weeks, but the headache did not set in until a week later and was accompanied by anorexia. Diarrhoea was present about the same time, but ceased within forty-eight hours. Three days before admission the patient had rather severe epistaxis.

On examination, the patient was found to be a well nourished girl, skin hot and dry, finger nails cyanosed, and mentally she was rather dull and irritable. Rose spots were present over the abdomen, which was distended and tender. The spleen was palpable, and the Widal reaction was positive. Temperature,  $101^{\circ}$ ; pulse, 126; respiration, 32. A few fine crepitant râles were present at the bases of both lungs.

The subsequent events were as follows:—The temperature rose steadily after admission and the following day sponges were ordered, but the temperature was little influenced by them. The next day tubs were given instead of sponges. This method was more effectual, the temperature dropping two and four degrees after each bath.

For two weeks after admission the temperature varied between  $103^{\circ}$ , which it reached daily, and  $98.2^{\circ}$ , to which it dropped on one occasion. The pulse during this time was rapid, remaining between 112 and 136. During the third week the temperature reached  $104^{\circ}$  daily except the last two days, when it ranged between 103 and  $97.1^{\circ}$ . The pulse remained persistently rapid, the rate being from 96 to 144. Marked cyanosis was present at times. The following week, the fourth after admission, the temperature subsided and remained below  $102^{\circ}$  with the exception of the first two days, when it reached  $102.4^{\circ}$  and  $103.1^{\circ}$ . The pulse was more rapid than during the preceding week varying between



120 and 148. Toward the latter part of the week tender toes were complained of.

On the evening of the 37th day of the disease the patient had a very sudden attack of dyspnoea with marked cyanosis. The former passed off within an hour, but the latter never entirely disappeared. The following day abdominal pain was present, referred especially to the epigastrium. The pulse during these two days ran between 112 and 132. The cardiac dulness had increased slightly to the left. The next day the pulse was very weak and more rapid. Its rate varied between 126 and 144. Through the night the patient became very weak, the cyanosis increased, and with it the pulse gradually became weaker until she died the following evening.

*Typhoid with Perforation previous to admission to the Hospital.*

*Case II.*—H. T., aged 16, male, Case No. 4924.

The patient entered the hospital on May 4th, 1900, in a condition of collapse and was unable to give an account of his present illness. From his physician the following history was obtained. The patient had left school two weeks previously on account of headache, malaise and anorexia. He had kept up on his feet for the following week although the weakness steadily increased, and feverishness had developed. The temperature reached 102° about the middle of the week. He went to bed one week before admission, and three days later diarrhoea set in and was troublesome for three days.

At 10 a.m. on the day he entered the hospital the temperature was 104°. There was no abdominal pain. The spleen was palpable and the respiratory rate slightly increased. The chest, on examination, showed nothing abnormal. Two hours later he complained of sharp pain in the abdomen which steadily increased in spite of local applications. At 6 p.m. he was admitted. Temperature, 101°; pulse, 126; respiration, 56.

On examination, delirium and subsultus were very pronounced. There was slight flushing of the cheeks with pallor about the mouth and chin. The forehead and trunk were covered with a cool perspiration but the feet were cold and clammy. The abdomen was distended and rigidity was marked throughout. The liver dulness was diminished and the note in the flank was dull. Over the base of the right lung resonance was impaired and diminished breath sounds were heard over this area.

The patient did not rally although free stimulation was employed, and died in less than five hours after admission.

*Typhoid Fever with Repeated Hæmorrhages and Uncontrollable Vomiting.*

*Case III.*—K. S., aged 34 years, female. Case No. 4968.

Admitted May 16, 1900, complaining of headache, anorexia, which had persisted with steadily increasing severity for ten days. There had been no nausea or vomiting. The bowels were regular. In the personal history there was nothing worthy of note other than that she had suffered for several years from mucous colitis.

On admission, the patient was found to be a poorly nourished woman of markedly neurotic disposition. The tongue was coated with a moist yellowish fur, the appetite was poor, and the bowels regular. The abdomen was not distended. There were no rose spots nor was the spleen palpable. The Widal reaction was present. The urine contained a trace of albumin.

The subsequent course of events was as follows:—Two days later rose spots appeared on the abdomen. The patient was frequently nauseated but did not vomit. The bowels moved freely during this time, the stools being liquid but containing no trace of blood. Ten days after admission the patient passed a small clot of blood with a stool. Diarrhœa was present during the next three days during which time the bowels moved from five to seven times in the twenty-four hours. The amount of blood passed was very small until the twelfth day after admission when the patient passed twenty-four ounces of bright red blood during the day. On the same day she vomited frequently. The next day hæmorrhage recurred, about five ounces being lost. Vomiting was again troublesome. On the fourteenth day after admission no blood was passed, but vomiting occurred several times although no nourishment was given by the mouth. The following day the pulse was very weak and rapid, 128, and the temperature 100.3°. A stool containing no blood was passed in the morning. Delirium was present for a few hours during the night. The next day there was no vomiting and no melæna; the delirium increased; the pulse became weaker and remained constantly above 120; temperature, 100°. Fæces and urine were passed involuntarily on the following day. The delirium was almost constant. This condition persisted for thirty-six hours during which the patient became progressively weaker and died.

*Typhoid Fever of Severe Type with Perforation on the Eleventh Day:  
Operation: Death.*

*Case IV.*—J. J., aged 18 years, male. Case No. 4970.

The patient was admitted May 10, 1900, complaining of pain in the abdomen, anorexia, and feverishness. For four days previous to admission the patient had been confined to bed but he had suffered from malaise and chilly sensations for a week and a half. The bowels were regular. No epistaxis and no vomiting had been present.

On examination, the patient was found to be a well nourished young man. The lips were dry, the tongue dry and brown. There was no delirium but tremor of the hands was very pronounced. Temperature, 101° pulse, 106 respiration, 20. The abdomen was somewhat distended and slightly tender throughout. Rose spots were numerous and the spleen palpable.

The patient was ordered tubs the following evening as the temperature had remained persistently elevated between 101.2 and 103.3°. During the succeeding forty-eight hours he was bathed every three hours. The temperature after the baths dropped from 1.2 to 4 degrees, but always rose above 102.2° within three hours. The temperature during the next forty-eight hours ranged between 99 and 103°. The pulse rate varied between 98 and 132. The baths were not given quite so frequently. The following day, the tenth day of the disease, the patient had two tubs. The pulse remained at about 112 and the temperature ranged between 97 and 103°.

On the morning of the 11th day of the disease he complained of some pain in his abdomen about 11.30 a.m., when being lifted into the tub. The distension of the abdomen, which had been present throughout the course of the disease, increased. Tenderness was present all over the abdomen. The patient had vomited some curdled milk during the morning. At 7 p.m. he vomited and again an hour later. The pulse was now 112 and temperature 100°. He was perspiring freely and the pain in the abdomen had increased. The abdomen was rigid and much distended. The liver dulness was encroached upon. Perforation was regarded as the cause of his condition and operation was decided on, which was performed at midnight.

On opening the abdomen free fluid, which was purulent and of faecal odour, escaped. General peritonitis was present. The perforation was found and closed. The patient rallied fairly well from the operation, the pulse, however, increased in frequency, 152, and was weak and running in character. Sixteen hours after operation the patient died.

*Typhoid Fever with Lobar Pneumonia.*

*Case V.*—A. B., aged 32 years, male. Case No. 4751.

The patient was admitted March 17, 1900, complaining of pain in the right side and shortness of breath. For about ten days previous to admission he had been suffering from headache, anorexia and general malaise. Three days previously the pain in the side set in and also slight cough. There was no definite rigor but chilly sensations were felt during the first two days.

On admission, the patient was seen to be a rather poorly nourished

man. The face was flushed and the tongue moist and coated with a yellowish fur. No delirium. Temperature, 103°; respiration, 32. Examination of the chest showed consolidation of the right lower lobe. The abdomen was not distended. No rose spots were visible nor was the spleen palpable.

For three days after admission the course of the disease remained favourable and the case was regarded as simple pneumonia. On the third day, however, diarrhœa set in and the following day the abdomen was distended and general tenderness was present. His mental condition was markedly impaired and the pulmonary lesion did not account for the condition of the patient. The Widal reaction was positive on the fifth and again on the sixth day after admission. The temperature declined somewhat but the pulse remained rapid. Delirium set in and was of a low muttering type. Distension of the abdomen increased and the spleen could not be palpated. The patient gradually became weaker, delirium continued, and the seventh day after admission he died.

*Typhoid Fever with Persistent Hæmorrhages.*

*Case VI.*—B. C., aged 33 years, female. Case No. 5026.

The patient was admitted to the hospital on June 2, 1900, complaining of weakness and hæmorrhage from the bowel. The following history was obtained: The weakness and diarrhœa had been present for three weeks. Four days previous to admission she had a slight hæmorrhage and had passed varying quantities of blood daily with stool since that time. There had been no headache nor epistaxis. Anorexia was present.

On admission she was found to be a poorly nourished woman. Face not flushed and mental condition fair. The abdomen was not prominent. There were no rose spots present and the spleen was not palpable. Temperature, 100.2°; pulse, 120; respirations, 28.

The subsequent events were as follows:—Almost immediately after admission the patient passed a stool containing blood, and twice during the evening involuntary stools were passed containing blood. The following day the patient's bowels moved frequently and each time blood was present. The Widal reaction was present on this day. The next day the patient passed blood several times; ten ounces were lost on one occasion. The temperature remained between 99.4 and 96°, and the pulse varied between 100 and 120. Hiccough was present for short intervals. The following day hæmorrhage recurred four times, and also on three occasions the day after. During the afternoon of this day the patient had a stool that was free from blood for the first time since admission. The mental condition was poor the pulse weak and the tongue dry and brown. The following day diarrhœa but no blood was present in the



stool. The patient rallied slightly but in the evening she vomited. The diarrhœa could not be controlled and was present the following day. The extremities were cold and clammy and the pulse became very weak. Vomiting occurred several times during the afternoon and in the evening the patient died.

*Typhoid Fever with Slight Hæmorrhage and Profound Intoxication.*

*Case VII.*—A. B., aged 54 years, male. Case No. 5275.

The patient was admitted to the hospital on September 15, 1900, complaining of weakness and vomiting. For the past three weeks he had suffered from general malaise which had progressively increased. Ten days previous to admission the patient began to vomit, and for eight days was unable to retain nourishment of any kind. The bowels were regular. There was no chill nor epistaxis at onset.

On examination the patient was seen to be a poorly nourished man with a dull and apathetic mental condition. The tongue was dry and brown and the skin hot and dry. The abdomen was distended and slight tenderness was present. Numerous rose spots were present over the abdomen and lower part of the thorax. The spleen was not palpable. The Widal reaction was present.

The subsequent events were as follows:—Nourishment was taken poorly, and the day after admission the patient vomited twice. The temperature was moderate and did not rise above  $101.4^{\circ}$  at any time while under observation. The pulse was weak and rapid and the heart sounds were faint. On the 19th day of the disease the patient had a stool containing bright blood in small quantity. During the succeeding two days the condition of the patient remained unchanged. On the 22nd day of the disease there was a recurrence of the hæmorrhage, but very small in amount. The patient was very weak and the mental condition was poor. Temperature,  $100.1^{\circ}$ ; pulse, 98. The following day the temperature became normal but the pulse rate increased. From this time the temperature remained subnormal till a few hours before death when it rose to  $100^{\circ}$ .

Two days before death vomiting set in and the patient was fed per rectum. The pulse became very feeble. The mental condition was much impaired, the patient being stuporose. Urine was voided involuntarily. The weakness increased and the patient died on the thirtieth day of the disease.

*Typhoid Fever of Comparatively Mild Type During the First Three Weeks with Sudden Increase in Severity; Perforation; Death.*

*Case VIII.*—J. B., aged 8 years, male. Case 5392.

The patient entered the hospital on October 25, 1900, the sixth day of

the disease, complaining of headache, feverishness, loss of appetite and general malaise. Diarrhœa was present the day previous to admission and also epistaxis.

On admission the patient was found to be a poorly nourished boy but the mental condition was good. The tongue was moist and slightly coated. The abdomen was flaccid, the spleen was not palpable, nor were rose spots present. The Widal reaction was negative. Temperature, 103.2°; pulse, 130; respiration, 32.

Two days later the Widal reaction was positive. The temperature varied between 99.4 and 104° during the first six days after admission, when it dropped and remained below 102° for the following seven days. The pulse also became less frequent and the general condition steadily improved. This condition continued until the 23rd day of the disease, when the temperature rose to 103.4°, and the pulse became more frequent, 112 to 116. The following day the temperature reached 104°, and the two succeeding days 105°. The pulse rate now ranged between 120 and 132. The abdomen became distended and tense. The following week the daily temperature range was very great, on one occasion there being a variation of nine degrees in twenty-four hours. The pulse remained very rapid, 110 to 130, and the distension of the abdomen persisted in spite of all the measures employed to relieve the tympanites.

On the 35th day he complained of severe abdominal pain. No definite rigidity was present, but tenderness increased. He suddenly became collapsed and did not rally through the night and died the following morning.

#### *Hæmorrhagic Typhoid Fever.*

*Case IX.*—V. D., aged 21 years, female. Case No. 5076.

Patient was admitted June 10, 1900, complaining of headache, pain in the back, and loss of appetite. For six days the above conditions had been present and had steadily increased in severity. At the time of onset of illness there had been a definite rigor. There was no epistaxis and bowels were regular.

On examination the patient was found to be well nourished but mental condition dull. The lips were dry and the tongue dry and brown. The face was flushed and the skin hot and dry. The abdomen was slightly prominent and somewhat tender. Rose spots were present and spleen palpable. Temperature, 100°; pulse, 98; and respiration, 22.

For a week after admission the case presented nothing of special interest. The abdomen remained distended and somewhat tender. The bowels moved daily. There was no delirium. The temperature was comparatively moderate and pulse never above 120. On the eighth day

after admission an area of subcutaneous hæmorrhages was seen over the abdomen about the umbilicus. The following day the distension was less. On June 29th the patient had two intestinal hæmorrhages, and over the left side of the back from the shoulder to the buttock purpuric patches appeared. The following night epistaxis was present and also hæmorrhages from the lips and gums, and on June 30th hæmaturia was present. A blood count taken on this day showed 13,000 leucocytes. The following day the temperature, which had declined somewhat during the twenty-four hours previously, continued to drop and the maximum temperature was  $101^{\circ}$ , pulse, 160; respiration, 28. Hæmaturia was still present and the area of subcutaneous hæmorrhages increased. On July 2nd the pulse was extremely weak and rapid and a few hæmorrhagic patches appeared on the lower extremities. During the night the pulse became almost imperceptible the temperature became subnormal and the patient died the following morning.

## "OBITER SCRIPTA," VIII.\*

BY

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AND

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### **Notes on Tuberculosis.**

The study of internal medicine presents but few chapters of greater variety and interest than those dealing with the manifold and protean manifestations of pulmonary tuberculosis. The obvious necessity of an early diagnosis and its importance to prophylaxis—the greater recognition of the diagnostic value of tuberculin—the benefits accruing from a prompt climatic treatment instituted in the early stages of the affection—have all combined to awaken in the responsible physician a sense of the importance of what may be called the more modern view of pulmonary tuberculosis.

While it is a matter of common observation that the incipient stages of the disease are often obscure, that the necessity of examining the lungs in all doubtful cases is imperative; and while too it is duly recognized that the mildest of minor ailments may arouse in us the suspicion of pulmonary infection, we are nevertheless tempted to recall a few instances of this kind, at the risk of inflicting possible platitudes on this society.

The opportunity having presented in the past few weeks of observing an unusual number of what might be termed atypical tubercloses, has urged us to examine in a casual way more of the records of tuberculous individuals who have entered the wards of the Royal Victoria Hospital for treatment. Not only do patients themselves imagine their ailment slight, but in a very large proportion of the cases a pulmonary infection was not suspected by the physician previously in attendance, or, at all events, the lungs had evidently not indicated the need of examination.

Perhaps the most insidious cases are those which have run to a well advanced infiltration with practically no cough whatever and very little or no expectoration. Such cases in our findings have proved to be not very uncommon, not only in senile cases but in patients, too, in early adult life. One of these cases, a young and intelligent professional man, stated that he had no cough whatever and merely a slight irritation of the throat which was relieved by very slight hacking and productive of practically no expectoration. And yet examination of the lungs revealed distinct consolidation of one apex with characteristic symptoms,

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while a week or so later in a small amount of the grey mucus—presumed to be from the back of the throat—tubercle bacilli were found.

In an elderly man a similar condition was observed. He never had had a cough, there was rarely even a hacking of the throat, and his main complaints were abdominal. Physical signs in the left lung were those of extensive infiltration, while his diurnal variations of temperature often exceeded  $3^{\circ}$  of fever. One morning in his sputum mug we detected a single expectoration of muco-pus which contained an unusually large number of tubercle bacilli. His disease progressed rapidly and after four weeks he was moribund and was removed to his home where he died shortly after. Nor did his case indicate in any way that his condition was one of caseous pneumonia, rather that of ulcerative phthisis. Towards the last 10 days of his sojourn there was, from time to time, expectoration, which again ceased later on, the sputum being either swallowed or retained through extreme weakness.

The same condition obtained and indeed seems to have been far from uncommon in those of our cases which were admitted for hæmoptysis. Not a few patients were to all evidences in excellent health and free from cough or expectoration when the initial hæmorrhage called for an examination of the lungs,—the *phthisis ab hæmoptæ* of older writers. In some of these cases the physical signs were absent and no evidence of the pulmonary origin could at first be detected. Such an experience is we believe by no means unusual and often with the hæmorrhage itself the condition seems to cease for a greater or less length of time. In others, there was distinct involvement and infiltration of both lungs. In two medical men that we know of, the initial hæmorrhages were disregarded, the one being attributed to bronchitis, the other to laryngitis; in both instances a repetition of the hæmorrhage and subsequent development proved the condition in each case to be tuberculosis and both gentlemen have since made an excellent recovery. In one other instance, a male æt. 21 years, developed from the outset of his disease blood tinged sputum which persisted for three weeks while he continued his daily routine as a laborer. Suddenly profuse bleeding supervened and he was obliged to take to his bed.

While these few notes are not intended to include any discussion of the nature of hæmoptysis, we cannot resist the temptation of stating how frequently patients with slight hæmoptyses have been allowed unwisely to continue occupations and go untreated, or when kept at rest have been permitted too soon to again resume their daily routine, an error which is most often due to lack of appreciation of the real source and significance of the hæmorrhage.

A word of digression apropos of the nature of the sputum may be of

interest. A large number of microscopic examinations of all varieties of cases must lead any one to believe that the naked eye appearances of the sputum in general are in every sense of the word unreliable. Gray-green, thick, purulent sputum has frequently been present in non-tuberculous bronchitides and, *per contra*, in the most innocent looking, thin, transparent sputa we have found what seemed like pure cultures of the bacillus tuberculosis.

In three or four cases the signs of tuberculosis were for a time completely obscured by a coincident chronic bronchitis and emphysema, all the cases being in elderly people. The lesions were in three merely those of the latter diseases and the sputum alone revealed the presence of the coincident affection. In one of these, a female æt. 62, careful examination of the sputum revealed nothing and the simpler disease was diagnosed. Slight fever however persisted for some weeks and the patient returned to her home. Some months later she was again admitted to the hospital having lost but little flesh and with signs but little altered. The fever was still present and after repeated examinations Dr. Cushing found bacilli of tuberculosis in the sputum.

That other cases again commence as acute bronchitis and present its classical features, we have also found in two instances. Indeed our records have shown that in very many cases the history of repeated so-called "bad colds" which persisted unusually long, might have more early aroused the suspicion of tuberculosis, just as do the many cases of protracted influenza *soi disant*.

In contradistinction to what might have been expected, there seem to have been but few cases of pulmonary tuberculosis masked by the mere symptoms of chlorosis. In one instance, a recent case, a young girl of 16 with typical signs of chlorosis, presented a slightly impaired note in the left apex. The stethoscope revealed very slight prolonged expiration and an occasional râle after coughing, heard only at long intervals. There was marked accentuation of the pulmonary second sound however and she was given tuberculin. A marked reaction followed and a day or two later crepitations in the apex became more distinct. Within the usual time the fever then subsided and the patient has since been doing well.

The unfortunate tuberculous patients who have been faultily treated for mere neurasthenia seem to have been few. Two such cases have come to our notice—one patient being confined to bed in her home for two months for "nervousness" though the temperature seems to have varied for a number of weeks during that time. Cough had been present but there was no expectoration.

The very close association of tuberculosis of the lungs with gastric

diseases is too common a matter of every day observation to deserve much reference in these few notes. By far the larger number of what might be called masked pulmonary tubercloses came for treatment of the alimentary canal and liver. Pains in the stomach and diarrhoea were most common—while the frequent error of the Poles in particular who mentally place their stomach in the thorax, is of course notorious. Anorexia if persistent should always make a chest examination imperative, this digestive symptom being among the commonest of the earliest signs. The presence of chronic diarrhoea likewise implies the great possibility of pulmonary disease and a secondary focus in the bowels. In five of our patients within the past two years the diarrhoea had quite masked any other complaints. Cough was either quite absent or so insignificant as to attract the attention of neither patient nor physician. Nor was the diarrhoea associated with fistula in ano in more than one of these instances, though fistula is so common in victims of pulmonary tuberculosis that its mere presence should suggest the advisability of a pulmonary examination. Pain after eating has been rather uncommon except when associated with other gastric disturbances. Vomiting occurred in a number of cases; in four it was the first symptom complained of, had been present for some time before cough was prominent and was fairly frequent and usually accompanied by anorexia and weakness. One instance was of particular interest inasmuch as with the gastric complaints there had been no other sign except weakness. There had been no actual cough though with an irritation of the pharynx a slight hacking occurred and bacilli were found in the small amount of mucous thus produced. During the few days of the patient's sojourn in the hospital there was no fever and yet examination revealed advanced involvement of one lung.

With reference to the temperature of tuberculous patients, while irregular fever is so characteristic a feature, we have been struck with the frequency of normal temperatures in patients whose pulmonary condition is advanced—this being doubtless due in a large part to the rest obtained in the hospital wards. In such cases a week or more of normal temperature has been superseded by a day's fever and again the normal would be resumed for many days. Even patients at times whose condition was becoming progressively worse and in whom cough, expectoration and loss of flesh were from week to week more pronounced, the temperature did not rise above the normal for weeks at a time. Such a condition is undeniably uncommon and its exceptional occurrence does not necessarily invalidate the diagnostic significance of daily slight fever in pulmonary and other forms of tuberculosis. Doubtless where marked involvement of the lungs occurs any moderate exercise would, as

in other cases, have raised the temperature above the normal; where the healing process is active and the patients are under favorable conditions the fever certainly seems less easily raised.

The necessity however of repeated observations on the temperature and at varying times of the day is obvious. In one of our cases the temperature at 4 o'clock was almost daily one to two degrees higher than at 6 o'clock when it frequently returned from about  $100^{\circ}$  to  $98^{\circ}$  or  $99^{\circ}$ .

Nor has it been our invariable experience to find that patients with fever would constantly lose in weight—our records in this respect have been made with considerable care and have shown that patients who have proper food and rest may often gain from week to week even though the temperature shows marked daily excursions of fever.

Not infrequently do patients come to hospital stating that though they have morning cough and expectoration, they have in other respects never enjoyed better health and have even put on flesh. Examination however proves the contrary and such patients not only have some fever but likewise have extensive disease of one or both lungs. The fact that a patient appears in excellent health is often found to be a fallacious criterion of the condition of the lungs and unless careful examination be made there is a liability to error in one's diagnosis.



## Abstract of Medicine.

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PREVENTIVE MEDICINE AND THERAPEUTICS IN THE NINETEENTH CENTURY ; AN ABSTRACT OF A PORTION OF PROFESSOR OSLER'S ARTICLE IN THE NEW YORK SUN OF JANUARY 27TH, 1901.

### Preventive Medicine.

The following are some of the diseases which have been remarkably controlled through preventive medicine :

*Smallpox.*—While not a scourge of the first rank like the plague or cholera, at the outset of the century variola was one of the most prevalent and dreaded of all diseases. Few reached adult life without an attack. To-day, though outbreaks still occur, it is a disease thoroughly controlled by vaccination. The protective power of the inoculated cowpox is not a fixed and constant quantity. The protection may be for life, or it may last only for a year or two. The all-important fact is this : That efficiently vaccinated persons may be exposed with impunity, and among large bodies of men (e. g., the German Army), in which revaccination is practised, smallpox is unknown. Of 100 vaccinated persons exposed to smallpox, possibly one might take the disease in a mild form ; of 100 unvaccinated persons so exposed, one alone might escape, from twenty-five to thirty would die. To be efficient, vaccination must be carried out systematically, and if all the inhabitants of this country were revaccinated at intervals, smallpox would disappear (as it has from the German Army) and the necessity for vaccination would cease. The difficulty arises from the constant presence of an unvaccinated remnant, by which the disease is kept alive. The Montreal experience in 1885 is an object lesson never to be forgotten.

For eight or ten years vaccination had been neglected, particularly among the French-Canadians. On Feb. 28, 1885, a Pullman car conductor, who came from Chicago, where the disease had been slightly prevalent, was admitted into the Hotel Dieu. Isolation was not carried out, and on the 1st of April a servant in the hospital died of smallpox. Following her death the authorities of the hospital sent to their homes all patients who presented no symptoms of the disease. Like fire in dry grass the contagion spread, and within nine months there died of smallpox 3,164 persons. It ruined the trade of the city for the winter and cost millions of dollars. There are no reasonable objections to vaccination, which is a simple process, by which a mild and harmless disease is introduced. The use of the animal vaccine does away with the possibility of introduction of other disorders, such as syphilis.

*Typhus Fever.*—Until the middle of the present century this disease prevailed widely in most of the large cities, particularly in Europe, and also in jails, ships, hospitals and camps. It was more widely spread than typhoid fever and much more fatal. Murchison remarks of it that a complete history of its ravages would be the history of Europe during the past three centuries and a half. Not one of the acute infections seems to have been more dependent upon filth and unsanitary conditions. With the gradual introduction of drainage and a good water supply, and the relief of overcrowding, the disease has almost entirely disappeared, and is rarely mentioned now in the bills of mortality, except in a few of the larger and more unsanitary cities. The following figures illustrate what has been done in England within sixty years: In 1838 in England 1,228 persons died of fever (typhus and typhoid) per million of living. Twenty years later the figures were reduced to 918; in 1858 to 306 of typhoid and to 36 of typhus fever. In 1892 only 137 died of typhoid fever and only 3 of typhus per million living!

*Typhoid Fever.*—While preventive medicine can claim a great victory in this disease also, it is less brilliant, since the conditions which favor its prevalence are not those specially relating to overcrowding as much as to imperfect water supply and the contamination of certain essential foods, like milk. It has been repeatedly demonstrated that with a pure water supply and perfect drainage, typhoid fever almost disappears from a city. In Vienna after the introduction of good water, the rate of mortality from typhoid fever fell from 12 per 10,000 of the inhabitants to about 1. In Munich the fall was still more remarkable, from above 29 per 10,000 inhabitants in 1857 it fell to about 1 per 10,000 in 1887. That typhoid fever in this country is still a very prevalent disease depends mainly upon two facts: First, not only is the typhoid bacillus very resistant, but it may remain for a long time in the body of a person after recovery from typhoid fever, and such persons in apparent good health may be a source of contamination. With many of the conditions favoring the persistence and growth of the bacillus outside the body we are not yet familiar. The experience in the Spanish-American War illustrates how dangerous is the concentration together of large numbers of individuals. But, second, the essential factor in the widespread prevalence of typhoid fever in the United States, particularly in country districts, is the absence of anything like efficient rural sanitation. Many counties have yet to learn the alphabet of sanitation. The chief danger results from the impure water supplies of the smaller towns, the local house epidemics, due to infected wells, and the milk outbreaks due to the infection of dairy farms.

The importance of scrupulously guarding the sources of supply was never better illustrated than in the well-known and oft quoted epidemic in Plymouth, Pa. The town, with a population of 8,000, was in part supplied with drinking water from a reservoir fed by a mountain stream. During January, February and March, in a cottage by the side of and at a distance of from sixty to eighty feet from this stream, a man was ill with typhoid fever. The attendants were in the habit at night of throwing out the evacuations on the ground toward the stream. During these months the ground was frozen and covered with snow. In the latter part of March and early in April there was considerable rainfall and a thaw, in which a large part of the three months' accumulation of discharges was washed into the brook not sixty feet distant. At the very time of this thaw the patient had numerous and copious discharges. About the 10th of April cases of typhoid fever broke out in the town, appearing for a time at the rate of fifty a day. In all about 1,200 were attacked. An immense majority of the cases were in the part of the town which received water from the infected reservoir.

The use of boiled water and of ice made from distilled water, the systematic inspection of dairies, the scrupulous supervision of the sources from which the water is obtained, an efficient system of sewage removal, and, above all, the most scrupulous care on the part of physicians and of nurses in the disinfection of the discharges of typhoid fever patients—these are the factors necessary to reduce to a minimum the incidence of typhoid fever.

*Cholera*.—One of the great scourges of the present century made inroads into Europe and America from India, its native home. We have, however, found out the germ, found out the conditions under which it lives, and it is not likely that it will ever again gain a foothold in this country or Great Britain. Since the last epidemic, 1813, the disease, though brought to this country on several occasions, has always been held in check at the port of entry. It is communicated almost entirely through infected water, and the virulence of an epidemic in any city is in direct proportion to the imperfection of the water supply. This was shown in a remarkable way in the Hamburg epidemic of 1892. In Altona, which had a filtration plant, there were only 516 cases, many of them refugees from Hamburg. Hamburg, where the unfiltered water of the Elbe was used, had some 18,000 cases with nearly 8,000 deaths.

*Yellow Fever*.—The cause of this disease is still under discussion. It has an interest to us in this country from its continued prevalence in Cuba, and from the fact that at intervals it makes inroads into the Southern States, causing serious commercial loss. The history of the disease in the other West India Islands, particularly Jamaica, indicates



the steps which must be taken for its prevention. Formerly yellow fever was as fatal a scourge in them as it is to-day in Cuba. By an efficient system of sanitation it has been abolished. The same can be done (and will be done) in Cuba within a few years. Gen Wood has already pointed out the way in the cleansing of Santiago.

*The Plague.*—One of the most remarkable facts in connection with modern epidemics has been the revival of the bubonic plague, the most dreaded of all the great infections. During the present century the disease in Europe has been confined almost exclusively to Turkey and Southern Europe. Since 1894, when it appeared at Hong Kong, it has gradually spread, and there have been outbreaks of terrible severity in India. It has extended to certain of the Mediterranean ports, and during the past summer it reached Glasgow, where there has been a small outbreak. On this hemisphere there have been small outbreaks in certain of the South American ports, cases have been brought to New York, and there have been to Nov. 1, twenty-one cases among the Chinese in San Francisco. Judging from the readiness with which it has been checked and limited in Australia, and in particular the facility with which the recent outbreak in Glasgow has been stamped out, there is very little risk that plague will ever assume the proportions which gave to it its terrible reputation as the "black death" of the Middle Ages. As I have already mentioned, the germ is known, and prophylactic inoculations have been made on a large scale in India with a certain measure of success.

*Tuberculosis.*—In all communities the *white plague*, as Oliver Wendell Holmes calls it, takes the first rank as a killing disease. It has been estimated that of it 120,000 people die yearly in this country. In all mortality bills tuberculosis of the lungs, or consumption, heads the list, and when to this is added tuberculosis of the other organs, the number swells to such an extent that this disease equals in fatality all the other acute infective diseases combined if we leave out pneumonia. Less than twenty years ago we knew little or nothing of the cause of the disease. It was believed to be largely hereditary. Koch discovered the germ, and with this have come the possibilities of limiting its ravages.

The following points with reference to it may be stated. In a few very rare instances the disease is transmitted from parent to child. In a large proportion of all cases the disease is "caught." The germs are widely distributed through the sputum, which, when dry, becomes dust, and is blown about in all directions. Tubercle bacilli have been found in the dust of streets, houses, hospital wards and much-frequented places. A single individual may discharge from the lungs countless myriads of germs in the twenty-four hours. Dr. Nuttall estimated from



a patient in the Johns Hopkins Hospital, who had only moderately advanced consumption, that from one and a-half to four and a-third billions of germs were thrown off in the twenty-four hours. The consumptive, as has been well stated, is almost harmless, and only becomes harmful through bad habits. The germs are contained in the sputum, which, when dry, is widely scattered in the form of dust, and constitutes the great medium for the transmission of the disease. If expectorated into a handkerchief, the sputum dries quickly, particularly if it is put into the pocket or under the pillow. The beard or mustache of a consumptive is smeared with the germs. Even in the most careful the hands are apt to be soiled with the germs, and in those who are dirty and careless the furniture and materials which they handle readily become infected. Where the dirty habit prevails of spitting on the floor, a room, or the entire house, may contain numbers of germs. In the majority of all cases the infection in tuberculosis is by inhalation. This is shown by the frequency with which the disease is met with in the lungs, and the great prevalence of tuberculosis in institutions in which the residents are restricted in the matter of fresh air and a free, open life. The disease prevails specially in cloisters, in jails and in asylums. Infection through milk is also possible; it is doubtful whether the disease is transmitted through meat. So widespread are the germs that post-mortem examination has shown that a very large number of persons show slight signs of the disease who have never during life presented any symptoms; in fact, some recent investigations would indicate that a very large proportion of all persons at the age of 40 have somewhere in their bodies slight tuberculous lesions. This shows the importance of the individual predisposition, upon which the older writers laid so much stress, and the importance of maintaining the nutrition at its maximum.

One of the most remarkable features of modern protective medicine is the widespread interest that has been aroused in the crusade against tuberculosis. What has already been accomplished warrants the belief that the hopes of even the most enthusiastic may be realized. A positive decline in the prevalence of the disease has been shown in many of the larger cities during the past ten years. In Massachusetts, which has been a hotbed of tuberculosis for many years, the death rate has fallen from 42 per 10,000 inhabitants in 1853 to 21.8 per 10,000 inhabitants in 1895. In the city of Glasgow, in which the records have been very carefully kept, there has been an extraordinary fall in the death rate from tuberculosis, and the recent statistics of New York city show, too, a similar remarkable diminution.

In fighting the disease our chief weapons are: First, education of the

public, particularly of the poorer classes, who do not fully appreciate the chief danger in the disease. Secondly, the compulsory notification and registration of all cases of tuberculosis. The importance of this relates chiefly to the very poor and improvident from whom, after all, comes the greatest danger, and who should be under constant surveillance in order that these dangers may be reduced to a minimum. Thirdly, the foundation in suitable localities by the city and by the State of sanatoria for the treatment of early cases of the disease. Fourthly, provision for the chronic, incurable cases in special hospitals.

*Diphtheria*.—Since the discovery of the germ of this disease and our knowledge of the conditions of its transmission, and the discovery of the antitoxin, there has been a great reduction in its prevalence and an equally remarkable reduction in the mortality. The more careful isolation of the sick, the thorough disinfection of the clothing, the rigid scrutiny of the milder cases of throat disorder, a more stringent surveillance in the period of convalescence, and the routine examination of the throats of school children—these are the essential measures by which the prevalence of the disease has been very markedly diminished. The great danger is in the mild cases, in which the disease has perhaps not been suspected, and in which the child may be walking about and even going to school. Such patients are often a source of widespread infection. The careful attention given by mothers to the teeth and mouth of children is also an important factor. In children with recurring attacks of tonsillitis, in whom the tonsils are enlarged, the organs should be removed. Through these measures the incidence of the disease has been very greatly reduced.

*Pneumonia*.—While there has been a remarkable diminution in the prevalence of a large number of all the acute infections, one disease not only holds its own, but seems even to have increased in its virulence. In the mortality bills pneumonia is an easy second to tuberculosis. It attacks particularly the intemperate, the feeble and the old, though every year a large number of robust, healthy individuals succumb. So frequent is pneumonia at advanced periods of life that to die of it has been said to be the natural end of old men in this country. In many ways, too, it is a satisfactory disease, if one may use such an expression. It is not associated with much pain, except at the onset, the battle is brief and short, and a great many old persons succumb to it easily and peacefully.

We know the cause of the disease; we know only too well its symptoms, but the enormous fatality (from 20 to 25 per cent.) speaks only too plainly of the futility of our means of cure: and yet in no disease has there been so great a revolution in treatment. The patient is no

longer drenched to death with drugs, or bled to a point when the resisting powers of nature are exhausted. We are not without hope, too, that in the future an antidote may be found to the toxins of the disease, and of late there have been introduced several measures of great value in supporting the weakness of the heart, a special danger in the old and debilitated.

*Hydrophobia*.—Rabies, a remarkable, and in certain countries a widespread, disease of animals, when transmitted to man by the bite of rabid dogs, wolves, etc., is known as hydrophobia. The specific germ is unknown, but by a series of brilliant observations Pasteur showed (1) that the poison has certain fixed and peculiar properties in connection with the nervous system; (2) that susceptible animals could be rendered refractory to the disease, or incapable of taking it, by a certain method of inoculation, and (3) that an animal unprotected and inoculated with a dose of the virus sufficient to cause the disease may, by the injection of proper anti-rabic treatment, escape. Supported by these facts Pasteur began a system of treatment of hydrophobia in man, and a special institute was founded in Paris for the purpose. When carried out promptly the treatment is successful in an immense majority of all cases, and the mortality in persons bitten by animals proved to be rabid, who have subsequently had the anti-rabic treatment, has been reduced to less than one-half per cent. The disease may be stamped out in dogs by careful quarantine of suspected animals, and by a thoroughly carried out muzzling order.

*Malaria*.—Among the most remarkable of modern discoveries is the cause of malarial fever, one of the great maladies of the world, and a prime obstacle to the settlement of Europeans in tropical regions. Until 1880 the cause was quite obscure. It was known that the disease prevailed chiefly in marshy districts, in the autumn, and that the danger of infection was greatest in the evening and at night, and that it was not directly contagious. In 1880 a French army surgeon, Laveran, discovered in the red blood corpuscles small bodies which have proved to be the specific germ of the disease. They are not bacteria, but little animal bodies resembling the amoeba—tiny little portions of protoplasm. The parasite in its earliest form is a small, clear, ring-shaped body inside the red blood corpuscle, upon which it feeds, gradually increasing in size and forming within itself blackish grains out of the colouring matter of the corpuscle. When the little parasite reaches a certain size it begins to divide or multiply, and an enormous number of these, breaking up at the same time, give off poison in the blood, which causes the paroxysms of fever. During what is known as the chill, in the intermittent fever for example, one can always find these dividing



parasites. Several different forms of the parasites have been found, corresponding to different varieties of malaria. Parasites of a very similar nature exist abundantly in birds. Ross, an army surgeon in India, found that the spread of this parasite from bird to bird was effected through the intervention of the mosquito. The parasites reach maturity in certain cells of the coats of the stomach of these insects, and develop into peculiar thread-like bodies, many of which ultimately reach the salivary glands, from which, as the insect bites, they pass with the secretion of the glands into the wound. From this as a basis numerous observers have worked out the relation of the mosquito to malaria in the human subject.

Briefly stated, the disease is transmitted chiefly by certain varieties of the mosquito, particularly the *Anopheles*. The ordinary *Culex*, which is present chiefly in the Northern States, does not convey the disease. The *Anopheles* sucks the blood from a person infected with malaria, takes in a certain number of parasites, which undergo development in the body of the insect, the final outcome of which is numerous small, thread-like structures, which are found in numbers in the salivary glands. From this point, when the mosquito bites another individual, they pass into his blood, infect the system, and in this way the disease is transmitted. Two very striking experiments may be mentioned. The Italian observers have repeatedly shown that *Anopheles* which have sucked blood from patients suffering with malaria, when sent to a non-malarial region, and there allowed to bite perfectly healthy persons, have transmitted the disease. But a very crucial experiment was made a few months ago, mosquitoes which had bitten malarial patients in Italy were sent to London and there allowed to bite Mr. Manson, son of Dr. Manson, who really suggested the mosquito theory of malaria. This gentleman had not lived out of England, and there is no acute malaria in London. He had been a perfectly healthy, strong man. In a few days following the bites of the infected mosquitoes he had a typical attack of malarial fever.

The other experiment, though of a different character, is quite as convincing. In certain regions about Rome, in the Campania, malaria is so prevalent that in the autumn almost every one in the district is attacked, particularly if he is a newcomer. Dr. Sambon and a friend lived in this district from the 1st of June to the 1st of September, 1900. The test was whether they could live in this exceedingly dangerous climate for the three months without catching malaria, if they used stringent precautions against the bites of mosquitoes. For this purpose the hut in which they lived was thoroughly wired, and they slept with the greatest care under netting. Both of these gentlemen at the end of the period had escaped the disease.



The importance of these studies cannot be overestimated. They explain the relation of malaria to marshy districts, the seasonal incidence of the disease, the nocturnal infection, and many other hitherto obscure problems. More important still, they point out clearly the way by which malaria may be prevented: First, the recognition that any individual with malaria is a source of danger in a community, so that he must be thoroughly treated with quinine; secondly, the importance of the draining of marshy districts and ponds in which mosquitoes breed, and, thirdly, that even in the most infected regions persons may escape the disease by living in thoroughly protected houses, in this way escaping the bites of mosquitoes.

*Venereal Diseases.*—These continue to embarrass the social economist and to perplex and distress the profession. The misery and ill health which they cause are incalculable, and the pity of it is that the cross is not always borne by the offender, but innocent women and children share the penalties. The gonorrhœal infection, so common, and often so little heeded, is a cause of much disease in parts other than those first affected. Syphilis claims its victims in every rank of life, at every age and in all countries. We now treat it more thoroughly, but all attempts to check its ravages have been fruitless. Physicians have two important duties: the incessant preaching of continence to young men, and scrupulous care in every case, that the disease may not be a source of infection to others, and that by thorough treatment the patient may be saved from the serious late nervous manifestations. We can also urge that in the interests of public health venereal diseases like other infections shall be subject to supervision by the State. The opposition to measures tending to the restriction of these diseases is most natural; on the one hand from women, who feel that it is an aggravation of a shocking injustice and wrong to their sex; on the other, from those who feel the moral guilt in a legal recognition of the evil. It is appalling to contemplate the frightful train of miseries which a single diseased woman may entail, not alone on her associates, but on scores of the innocent—whose bitter cry should make the opponents of legislation to feel that any measures of restriction, any measures of registration, would be preferable to the present disgraceful condition, which makes of some Christian cities open brothels and allows the purest homes to be invaded by the most loathsome of all diseases.

*Leprosy.*—Since the discovery of the germ of this terrible disease systematic efforts have been made to improve the state of its victims and to promote the study of the conditions under which the disease prevails. The English Leprosy Commission has done good work in calling attention to the widespread prevalence of the disease in India and in

the East. In this country leprosy has been introduced into San Francisco by the Chinese, and into the North-western States by the Norwegians, and there are foci of the disease in the Southern States, particularly Louisiana, and in the Province of New Brunswick. The problem has an additional interest since the annexation of Hawaii and the Philippine Islands, in both of which places leprosy prevails extensively. By systematic measures of inspection and the segregation of affected individuals the disease can readily be held in check. It is not likely ever to increase among native Americans, or again to gain such a foothold as it had in the Middle Ages.

*Puerperal Fever.*—Perhaps one of the most striking of all victories of preventive medicine has been the almost total abolition of so-called childbed fever from the maternity hospitals and from private practice. In many institutions the mortality after child birth was 5 or 6 per cent., indeed sometimes as high as 10 per cent., whereas to-day, owing entirely to proper antiseptic precautions, the mortality has fallen to 3 to 4 per cent. The recognition of the contagiousness of puerperal fever was the most valuable contribution to medical science made by Oliver Wendell Holmes. There had been previous suggestions by several writers, but his essay on the Contagiousness of Puerperal Fever, published in 1843, was the first strong, clear, logical statement of the case. Semmelweis, a few years later, added the weight of a large practical experience to the side of the contagiousness, but the full recognition of the causes of the disease was not reached until the recent antiseptic views had been put into practical effect.

#### THE NEW DISPENSATION IN TREATMENT.

The century has witnessed a revolution in the treatment of disease, and the growth of a new school of medicine. The old schools—regular and homœopathic—put their trust in drugs, to give which was the alpha and the omega of their practice. For every symptom there were a score or more of medicines—vile, nauseous compounds in one case; bland, harmless dilutions in the other. The new school has a firm faith in a few good, well-tried drugs, little or none in the great mass of medicines still in general use. Imperative drugging—the ordering of medicine in any and every malady is no longer regarded as the chief function of the doctor. Naturally, when the entire conception of the disease was changed, there came a corresponding change in our therapeutics. In no respect is this more strikingly shown than in our present treatment of fever: say of the common typhoid fever. During the first quarter of the century the patients were bled, blistered, purged and vomited, and dosed with mercury, antimony and other compounds to meet special

symptoms. During the second quarter, the same, with variations in different countries. After 1850 bleeding became less frequent, and the experiments of the Paris and Vienna schools began to shake the belief in the control of fever by drugs. During the last quarter sensible doctors have reached the conclusion that typhoid fever is not a disease to be treated with medicines, but that in a large proportion of all cases diet, nursing and bathing meet the indications. There is active, systematic, careful, watchful treatment, but not with drugs. The public has not yet been fully educated to this point and medicines have sometimes to be ordered for the sake of the friends, and it must be confessed that there are still in the ranks *antiques* who would insist on a dose of some kind every few hours.

The battle against poly-pharmacy, or the use of a large number of drugs (of the action of which we knew little, yet we put them into bodies of the action of which we know less) has not yet been fought to a finish. There have been two contributing factors on the side of progress—the remarkable growth of the sceptical spirit fostered by Paris, Vienna and Boston physicians, and above all the valuable lesson of homœopathy, the infinitesimals of which certainly could not do harm, and quite as certainly could not do good; yet nobody has ever claimed that the mortality among homœopathic practitioners was greater than among those of the regular school. A new school of practitioners has arisen which cares nothing for homœopathy and less for so-called allopathy. It seeks to study rationally and scientifically the action of drugs, old and new. It is more concerned that a physician shall know how to apply the few great medicines which all have to use, such as quinine, iron, mercury, iodide of potassium, opium and digitalis, rather than a multiplicity of remedies the action of which is extremely doubtful.

The growth of scientific pharmacology, by which we now have many active principles instead of crude drugs, and the discovery of the art of making medicines palatable, have been of enormous aid in rational practice. There is no limit to the possibility of help from the scientific investigation of the properties and action of drugs. At any day the new chemistry may give to us remedies of extraordinary potency, and of as much usefulness as cocaine. There is no reason why we should not, even in the vegetable world, find for certain diseases specifics of virtue fully equal to that of quinine in the malarial fevers.

One of the most striking characteristics of the modern treatment of disease is the return to what used to be called the natural methods—diet, exercise, bathing and massage. There probably never has been a period in the history of the profession when the value of *diet* in the prevention and the cure of disease was more fully recognized. Dyspepsia, the



besetting malady of this country, is largely due to improper diet, imperfectly prepared and too hastily eaten. One of the great lessons to be learned is that the preservation of health depends in great part upon food well cooked and carefully eaten. A common cause of ruined digestion, particularly in young girls, is the eating of sweets between meals and the drinking of the abominations dispensed in the chemists' shops in the form of ice cream sodas, etc. Another frequent cause of ruined digestion in business men is the hurried meal at the lunch counter. And a third factor, most important of all, illustrates the old maxim, that more people are killed by overeating and drinking than by the sword. Sensible people have begun to realize that alcoholic excesses lead inevitably to impaired health. A man may take four or five drinks of whiskey a day, or even more, and think perhaps that he transacts his business better with that amount of stimulant; but it only too frequently happens that early in the fifth decade, just as business or political success is assured, Bacchus hands in heavy bills for payment, in the form of serious disease of the arteries or of the liver, or there is a general breakdown. With the introduction of light beer there has been not only less intemperance, but a reduction in the number of the cases of organic disease of the heart, liver and stomach caused by alcohol. While temperance in the matter of alcoholic drinks is becoming a characteristic feature of Americans, intemperance in the quantity of food taken is almost the rule. Adults eat far too much, and physicians are beginning to recognize that the early degenerations, particularly of the arteries and of the kidneys, leading to Bright's disease, which were formerly attributed to alcohol, are due in large part to too much food.

*Nursing.*—Perhaps in no particular does nineteenth century practice differ from that of the preceding centuries more than in the greater attention which is given to the personal comfort of the patient and to all the accessories comprised in the art of nursing. The physician has in the trained nurse an assistant who carries out his directions with a watchful care, and who is on the lookout for danger signals, and with accurate notes enables him to estimate the progress of a critical case from hour to hour. The intelligent, devoted women who have adopted the profession of nursing are not only in their ministrations a public benefaction, but they have lightened the anxieties which form so large a part of the load of the busy doctor.

*Massage and Hydrotherapy* have taken their places as most important measures of relief in many chronic conditions, and the latter has been almost universally adopted as the only safe means of combating the high temperatures of the acute fevers.

Within the past quarter of a century the value of *exercise* in the education of the young has become recognized. The increase in the



means of taking wholesome out-of-door exercise is remarkable, and should show in a few years an influence in the reduction of the nervous troubles in young persons. The prophylactic benefit of systematic exercise, taken in moderation by persons of middle age, is very great. Golf and the bicycle have in the past few years materially lowered the average incomes of the doctors of this country as derived from persons under 40. From the senile contingent—those above this age—the average income has for a time been raised by these exercises, as a large number of persons have been injured by taking up sports which may be vigorously pursued with safety only by those with young arteries.

Of three departures in the art of healing brief mention may be made. The use of the extracts of certain organs (or of the organs themselves) in disease is as old as the days of the Romans, but an extraordinary impetus has been given to the subject by the discovery of the curative powers of the extract of the thyroid gland in the diseases known as cretinism and myxœdema. The brilliancy of the results in these diseases has had no parallel in the history of modern medicine, but it cannot be said that in the use of the extracts of other organs for disease the results have fulfilled the sanguine expectations of many. There was not, in the first place, the same physiological basis, and practitioners have used these extracts too indiscriminately and without sufficient knowledge of the subject.

Secondly, as I have already mentioned, we possess a sure and certain hope that for many of the acute infections antitoxins will be found.

A third noteworthy feature in modern treatment has been a return to psychical methods of cure, in which *faith in something is suggested* to the patient. After all, faith is the great lever of life. Without it man can do nothing: with it, even with a fragment, as a grain of mustard seed, all things are possible to him. Faith in us, faith in our drugs and methods, is the great stock in trade of the profession. In one pan of the balance put the pharmacopœias of the world, all the editions from Dioscorides to the last issue of the United States Dispensatory; heap them on the scales as did Euripides his books in the celebrated contest in the "Frogs;" in the other put the simple faith with which from the days of the Pharaohs until now the children of men have swallowed the mixtures these works describe, and the bulky tomes will kick the beam. It is the *aurum potabile*, the touchstone of success in medicine. As Galen says, confidence and hope do more good than physic—"he cures most in whom most are confident." That strange compound of charlatan and philosopher, Paracelsus, encouraged his patients "to have a good faith, a strong imagination, and they shall find the effects" (Burton). While we often overlook or are ignorant of our own faith cures, doctors are just a wee bit too sensitive about those performed out-

side our ranks. They have never had, and cannot expect to have, a monopoly in this panacea, which is open to all, free as the sun, and which may make of every one in certain cases, as was the Lacedemon of Homer's day, "a good physician out of Nature's grace." Faith in the gods or in the saints cures one, faith in little pills another, hypnotic suggestion a third, faith in a plain, common doctor a fourth. In all ages the prayer of faith has healed the sick, and the mental attitude of the suppliant seems to be of more consequence than the powers to which the prayer is addressed. The cures in the temples of Æsculapius, the miracles of the saints, the remarkable cures of those noble men, the Jesuit missionaries, in this country, the modern miracles at Lourdes and at St. Anne de Beaupré in Quebec, and the wonder-workings of the so-called Christian Scientists, are often genuine and must be considered in discussing the foundations of therapeutics. We physicians use the same power every day. If a poor lass, paralyzed apparently, helpless, bed-ridden for years, comes to me, having worn out in mind, body and estate a devoted family, if she in a few weeks or less by faith in me, and faith alone, takes up her bed and walks, the saints of old could not have done more, St. Anne and many others can scarcely to-day do less. We enjoy, I say, no monopoly in the faith business. The faith with which we work, the faith, indeed, which is available to-day in everyday life, has its limitations. It will not raise the dead; it will not put in a new eye in place of a bad one (as it did to an Iroquois Indian boy for one of the Jesuit fathers), nor will it cure cancer or pneumonia or knit a bone, but in spite of these nineteenth century restrictions, such as we find it, faith is a most precious commodity, without which we should be very badly off.

*Hypnotism*, introduced by Mesmer in the past century, has had several revivals as a method of treatment during the present century. The first careful study of it was made by Braid, a Manchester surgeon, who introduced the terms hypnotism, hypnotic and nervous sleep; but at this time no very great measure of success followed its use in practice, except perhaps in the case of an Anglo-Indian surgeon, James Esdaile, who, prior to the introduction of anæsthesia, had performed 261 surgical operations upon patients in a state of hypnotic unconsciousness. About 1880 the French physicians, particularly Charcot and Bernheim, took up the study, and since that time hypnotism has been extensively practised. It may be defined as a subjective psychological condition, what Braid called nervous sleep, resembling somnambulism, in which, as Shakespeare says, in the description of *Lady Macbeth*, the person receives at once the benefit of sleep and does the effects or acts of watching or waking. Therapeutically, the important fact is that the individual's natural susceptibility to suggestion is increased, and this may

hold after the condition of hypnosis has passed away. The condition of hypnosis is usually itself induced by suggestion, requesting the subject to close the eyes, to think of sleep, and the operator then repeats two or three times sentences suggesting sleep, and suggesting that the limbs are getting heavy and that he is feeling drowsy. During this state it has been found that the subjects are very susceptible to suggestion.

Too much must not be expected of hypnotism, and the claims which have been made for it have been too often grossly exaggerated. It seems, as it has been recently well put, that hypnotism "at best permits of making suggestions more effective for good or bad than can be done upon one in his waking state." It is found to be of very little use in organic disease. It has been helpful in some cases of hysteria, in certain functional spasmodic affections of the nervous system, in the vicious habits of childhood, and in suggesting to the victims of alcohol and drugs that they should get rid of their inordinate desires. It has been used successfully in certain cases for the relief of labor pains, and in surgical operations, but on the whole, while a valuable agent in a few cases, it has scarcely fulfilled the expectations of its advocates. It is a practice not without serious dangers, and should never be performed except in the presence of a third person, and its indiscriminate practice by ignorant persons should be prevented by law.

One mode of faith-healing in modern days, which passes under the remarkable name of Christian Science, is probably nothing more than mental suggestion under another name. "The patient is told to be calm, and is assured that all will go well; that he must try to aid the healer by believing that what is told him is true. The healer then quietly, but firmly, asserts and reiterates that there is no pain, no suffering, that it is disappearing, that belief will come that the patient is getting well." This is precisely the method which Bernheim used to use with such success in his hypnotic patients at Nancy, iterating and reiterating, in a most wearisome way, that the disease would disappear and the patient would feel better. As has been pointed out by a recent writer (Dr. Harry Marshall), the chief basis for the growth of Christian Science is that which underlies every popular fallacy. Oliver Wendell Holmes outlined very clearly the factors concerned, showing (*a*) "how easily abundant facts can be collected to prove anything whatsoever; (*b*) how insufficient, 'exalted wisdom, immaculate honesty and vast general acquirements,' are to prevent an individual from having the most primitive ideas upon subjects out of his line of thought, and, finally, demonstrating 'the boundless credulity and excitability of mankind upon subjects connected with medicine.'"



# RETROSPECT OF CURRENT LITERATURE.

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## Medicine.

UNDER THE CHARGE OF JAMES STEWART.

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### **On Some of the Cerebral Complications of Whooping Cough.**

For a long time it has been recognized that various forms of cerebral paralysis may arise during the course of whooping cough. The explanation usually given has been the occurrence of a hæmorrhage into either the substance of the brain or into the meninges. There is, however, not only strong clinical evidence but also anatomical proof in a few cases that in a certain number of cases of cerebral paralysis coming on during the course of whooping cough, the cause is an encephalitis and not a hæmorrhage.

At a recent meeting of the Berlin Medical Society (*Berliner Klin. Woch.* No. 52, 1900.) Arnheim related a case of cerebral diplegia which he considered to be of this nature. The subject was a boy four years old of healthy parents. The child, with the exception of a slight otorrhœa, had been previously healthy. About a month after the onset of whooping cough he had repeated attacks of convulsions followed by vomiting and somnolence, which progressed after some days to complete coma. The symptoms were those of a meningitis. There was rigidity of the muscles of the neck and extremities, slight fever, and a slow pulse. There was no motor paralysis or disturbance of sensation. A few cubic centimetres of cerebro-spinal fluid removed by lumbar puncture did not show any organisms. After a period of coma lasting forty days the child gradually regained consciousness. He was then found to be aphasic and to have lost power in all the extremities. After four or five months both speech and power in the extremities very slowly and gradually returned. When the child was presented to the Berlin Medical Society, nearly a year after the onset of the whooping cough and about eleven months after the advent of the nervous symptoms, he was found to be still somewhat weak in all the extremities, and more or less ataxic also. The speech was very imperfect, resembling closely the disturbance of speech (dysarthria) seen in cases of apoplexy.



The muscles were soft and wasted but did not show the reaction of degeneration. The fundi were normal and the deep reflexes also.

Paralysis, cerebral in its origin, is not an infrequent complication during the course of whooping cough. In the great majority of cases described it is hemiplegic and not diplegic as in the instance above described. Arnheim considers that the cause in his case was an encephalitis and not a hæmorrhage. Until recently it was the rule to ascribe all such forms of cerebral paralysis to hæmorrhage consequent on the rupture of a blood vessel during an attack of coughing. Several cases of paralysis of similar distribution have been reported recently where a post-mortem was held and where no sign of rupture of blood vessels was met with. Even in cases of hemiplegia it has been found that the cause of the paralysis in several instances has not been due to hæmorrhage. In a few cases no changes whatever could be detected, in a few an encephalitis has been found.

Clinically, the difference between an encephalitis (non-suppurative) and a hæmorrhage into the membranes or substance is generally very marked. The encephalitis presents the symptoms of a meningitis, while a hæmorrhage usually brings about a very sudden onset and is not progressive in its course. The distinction is of practical importance, as recovery either complete or partial is the rule in encephalitis and the contrary in hæmorrhage.

In the discussion which followed the reading of Arnheim's paper, Rothmann related the details of a case of evidently bilateral hæmorrhage into either the membranes or substance of the brain. The paralysis came on immediately after an unusually severe coughing spell. Eighteen months afterwards the limbs were still paretic and ataxic. There was also a very marked intention tremor. The tremor was first noticed a few weeks after the onset of the paralysis, resembled in its features closely the tremor seen in insular sclerosis, and pointed to the probable presence of sclerotic patches in the subcortical areas.

In the discussion, Boginsky referred to another grave cerebral complication in the course of whooping cough, *viz.*, the appearance of severe mental disturbance. He has seen a number of cases where a condition resembling idiocy has set in and which passed away completely after lasting a few weeks or months. He considers that the active cause in such a state is positively a toxic poisoning.

#### **The Epidemic of Arsenical Neuritis in England.**

The serious epidemic of arsenical poisoning in Manchester, Liverpool, and neighbouring towns from beer contamination has been very carefully studied by different observers. It has been clearly shown that the adulteration occurred through the use of an impure sulphuric acid

(prepared from arsenical pyrites) in the manufacture of glucose which was supplied to the brewers. The contamination of the beer would appear to have commenced early last summer, and for some time it was thought that the frequent cases of neuritis reported from various quarters were due to alcohol. It was, we believe, Dr. Reynolds, of Manchester, who first showed that it was arsenical in its origin. The epidemic would appear to have been mainly confined to the very poor people who drink the cheapest kind of beer.

In a recent number of the *British Medical Journal* (Jan. 5, 1901), Drs. Raw, Barendt, and Warrington, of Liverpool, give an account of the more important symptoms met with in some 70 cases studied by them in the Mill Road Infirmary in Liverpool. It has been shown that in some beers the contamination with arsenic would amount to about one-fifth of a grain of arsenic for each glass. Several poisonings have been noticed in persons who have only taken a glass or two of beer for a short time. The symptoms of the poisoning did not differ very essentially from those met with in alcoholic neuritis, with the exception of the staining of the skin in the former. This would appear to have been a very frequent and very marked symptom. The pigmentation was generally diffused throughout the body but more marked in certain parts, as the flexures of the joints and internal aspects of the limbs. It was also very deep where the covered and uncovered skin meet, and over the areas where the clothes pressed especially. It was noticed that the cases where the pigmentation was very intense and conjunctivitis marked rarely showed conspicuous symptoms of peripheral neuritis. In persons who were considered to be moderate drinkers of beer or stout, disturbance of sensation was the most obtrusive symptom. They were mainly of a subjective nature such as numbness and tingling in the hands and feet. In some cases all that was complained of was a burning sensation in the soles, which prevented them from walking. Pain on moving the joints and on pressing the muscles was usually very marked. Objective disturbance of sensibility was rarely present. In several cases the soles of the feet presented a red flushed appearance (erythromelalgia). The motor symptoms varied much in different cases but did not as far as could be observed differ from the same symptoms met with in alcoholic neuritis. In a number of the cases it was a question whether alcohol was not also a factor in the causation of the neuritis. No distinct disorder of coördination was observed in any of the cases.

Only one case proved fatal, while in a number recovery would likely be imperfect owing to the depth of the motor paralysis.

*James Stewart.*

## Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

### Cocaine Anæsthesia.

- MATAS. "Local and Regional Anæsthesia with Cocaine and other Analgesic Drugs, including the Subarachnoid Method." *Phil. Med. Jour.*, Nov. 3, 1900.
- FOWLER. "Cocaine Analgesia from Subarachnoid Spinal Injection." With report of forty-four cases. *Ibid.*
- GOLDAN. "Intraspinal Cocainization for Surgical Anæsthesia." *Ibid.*
- MARX. "Analgesia in Obstetrics produced by Medullary Injections of Cocaine." *Ibid.*
- PHELPS. "Subarachnoid Injections of Cocaine as a substitute for General Anæsthesia." *Ibid.*
- DUMONT. "Intra-arachnoid Injections of Cocaine." *Correspondenzbl. f. Schweiz. Aerzte*, Oct. 1, 1900.
- GOILAV. "The Risk of Injection of Cocaine into the Spinal Cavity." *Bull. et. Men. de la Soc. de Chir. de Bucarest*, No. 5, 1900.

The history of cocaine since the announcement of its analgesic properties to the medical world in 1884 by the Heidelberg student Kolber, has certainly been remarkable. It was enthusiastically and very generally received and widely used. Its analgesic properties were soon found to be definite and positive, and its toxic power equally decided. It has probably caused more deaths among patients and anxiety to operators than will ever be credited to it in this world. Since Schleich and Heinze demonstrated that very weak solutions were analgesic, the unfortunate accidents resulting from its use have become almost unknown.

On two previous occasions our readers have been given the results of Bier's experiments in the use of intraspinal injections, and a statement of Tuffier's operation work using intraspinal injections of cocaine instead of general anæsthesia. A considerable experience in the use of the drug by different operators has now been published, and while it is perhaps too soon to pronounce upon it yet, it is evident that there are decided objections to its introduction into the spinal canal. From published reports it is evident that the technique of intraspinal injections is difficult. If heated above 80° F., cocaine is decomposed. It is in this respect inferior to euaine B, which can be sterilized by boiling

without impairment of its therapeutic power. There is no obvious reason why the spinal canal might not be infected during the intraspinal injection of cocaine, through some defect in technique or imperfect sterilization of the cocaine solution. It is indeed reported that one of Kocher's cases died subsequently of meningitis.

An almost constant sequence has been the result of the toxic property of the cocaine even in doses of 1-5 of a grain. The evidences of this are the pallor, cold perspiration, and shabby pulse, with total relaxation of the sphincters at the time of use, and the severe headache which follows and persists for several days afterwards in a very considerable percentage of cases, and often is accompanied by vomiting.

Lesser objections to the intraspinal injection of cocaine are the uncertainty of its action, particularly in chronic alcoholics, the indefinite duration of its analgesic action, the danger of intraspinal hæmorrhage when used in patients suffering from arteriosclerosis, the fact that the patient is conscious of an operation being performed, rendering its use in children impossible, and the fact that it does not produce muscular relaxation. Above all, is the increasing testimony as to its danger to life. In Roumania, where it has been used very extensively, death has resulted not infrequently. Tuffier in 125 cases had 5 deaths, although in 4 he claims that the deaths were not due to cocaine. There is evidence that its use within the spinal canal is followed by a larger mortality than either chloroform or ether. These results fully sustain Bier in the conservative attitude that he has maintained since he first introduced the method for surgical purposes in 1898. He holds that the problem is not to use cocaine in the manner which he first described, and for which he predicts no great future, but to devise means of rendering cocaine harmless and of preventing its unpleasant after-effects, or to discover some non-toxic substance.

Certainly at present one can hardly feel justified in injecting cocaine into the spinal canal unless under very unusual circumstances.

### **Operation without Touching the Wound with Finger or Hand**

KÖNIG. "Aseptik der Hände. Operation ohne direkte Berührung der Wunde mit Finger und Hand." (*Centrallblatt f. Chirurgie*, 1900, No. 36.

The numerous methods described in medical journals during the past few years for rendering the hands aseptic, the attempts at getting some "lacquer," and the adoption by many surgeons of gloves composed of various textures, demonstrate the danger of infection from the hands of the operator and his assistants, and the practical difficulty in avoiding it.



König therefore suggests that operating surgeons take a lesson from some of the skilled workmen in the trades and learn to operate without handling the wound directly with the fingers. He refers to the blacksmith, who shoes a horse without touching the hoof or shoe with his hands, and to the gold or silver smiths who do fine artistic work by means of instruments or tools. Let the surgeon then learn to handle the tissues indirectly through instruments and thus, by avoiding direct contact with the fingers, avoid infection.

This may be done with great advantage in, for example, joint operations. The joint may be opened, a loose body found and removed, without allowing the fingers to enter the joint at all. The writer has adopted this course with most satisfactory results. The same may be said of joint resections or the suturing of a fractured patella.

With patience and practice an operation for the radical cure of hernia could be carried out without direct contact of the fingers. The same may be said of very many of the operations performed upon the extremities, upon the spine, upon bones, and upon the skull.

The performance of abdominal operations presents greater difficulties. It is then imperative that the fingers be introduced into the cavity for the acquirement of information and the carrying out of the details of the operation. Even when operating within the abdomen, however, manual manipulations may sometimes be lessened by the use of a good light, sterile gauze pads, and retractors. Certainly, the less tissues are handled with fingers and hands, the less the danger of infection.

*G. E. Armstrong.*

## Reviews and Notices of Books.

THE PRINCIPLES OF TREATMENT AND THEIR APPLICATIONS IN PRACTICAL MEDICINE. By J. MITCHELL BRUCE, M.A., M.D., F.R.C.P., Physician and Lecturer on the Principles and Practice of Medicine, Charing Cross Hospital. Young J. Pentland, Edinburgh and London, 1899.

We have read with much pleasure this very interesting volume, and regard it as one of the most useful and thoughtful of recent works on therapeutics. The first half of the book is devoted to purely general considerations and discusses the indications for rational treatment, which may be gained from the study of the etiology, the pathology and the clinical characters and cause of disease. A chapter is devoted to the influence which the personal factor should exert on treatment. The various therapeutic means at ones disposal are then considered and the value of proper food, exercise, and rest, is emphasised.

The author lays down the following rules as applicable to the management of all cases of disease; we would commend them to the earnest attention of every young medical practitioner.

The line of treatment adopted at the commencement must be adhered to for a sufficient length of time to test it fairly; vacillation is one of the worst of weaknesses in a practitioner.

If the case be doing well, let well alone. During the progress of a case, an effort should be made to interrupt vicious circles. Treatment, the author says, often consists in opportunely throwing a weight into nature's side of the scale; afterwards she may be left to right herself. It is not necessary to do everything that is to be done; frequently, it is sufficient to start recovery on the right line by relieving the diseased organ of arrears of work, which hamper it. The interdependence of all the bodily organs, however, on which the formation of vicious circles depends, must never be forgotten. The most judicious medical men are those who will take the body as a whole, the good and bad, observing all the different functions, and by simple methods rule and guide the whole organism, so as to bring it to a proper adjustment. (Wilks.)

Lastly, the author urges that in many instances it is wise to be content with a moderate result. To attempt to secure complete recovery may not infrequently be more than unsuccessful; and actually harmful.

The second part is devoted to the illustrations of these principles in the treatment of the various diseases.

The author writes in a charming style; every page may be read with pleasure and profit. We can cordially recommend the work not only to every student, but to every practitioner of medicine. *A. D. B.*

**PATHOLOGY AND SURGICAL TREATMENT OF TUMOURS.** By N. SENN, M.D., Ph.D., LL.D., Professor of Practice of Surgery and of Clinical Surgery. Rush Medical College, etc., etc. W. B. Saunders, Philadelphia. J. A. Carveth & Co., Toronto. Price, \$6.00.

While this work is most valuable from a surgical point of view and gives us the opinions and methods of one who has deservedly obtained the reputation of being one of the most brilliant American surgeons, we are forced to point out as we did in a previous edition, that it cannot be recommended as affording an adequate discussion of the pathology of tumours, indeed it should not pretend to be a treatise on this subject. Dr. Senn's definition of what constitutes a tumour proper is one in which we find ourselves inclined thoroughly to agree. It is not, therefore, that we disagree with his views. Our objection is that very much has been written upon this subject since the first edition came out, but to this there is very little reference; scarce anything is said, for example, with regard to the studies of Hanseemann and Ribbert (to mention but the two leading German workers during the last ten years); the parasitic theory which has attracted so much attention of late is dismissed almost contemptuously, and although we ourselves have some sympathy with the author in this matter, nevertheless the arguments of those holding this theory together with the few facts which they have determined with so much labour, should have been brought forward and seriously discussed. We should have expected a fuller study of the endo- and peritheliomata: while, lastly, we should have expected some admission that the embryological method of classification is imperfect and out of date, and that gliomata, for example, cannot be classified among the mesoblastic tumours. *J. G. A.*

**SAUNDERS' MEDICAL HAND ATLASES—ATLAS AND EPITOME OF GENERAL PATHOLOGICAL HISTOLOGY, WITH AN APPENDIX ON PATHOLOGICAL HISTOLOGICAL TECHNIQUE.** By DR. H. DURCK of Munich. Edited by LUDWIG HEKTOEN, M.D. W. B. Saunders & Company, Philadelphia, 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$3.00.

This volume of the Munich Medical Hand Atlases has been translated for the American Edition by Professor Hektoen of Chicago, who has added here and there to the German letter press, and so has materially improved it. It is the first of three volumes upon general and special morbid histology. Like all the other works of this series the

illustrations are the main feature, and these colored representations of sections of different organs and tissues in varying conditions of disease are almost uniformly excellent. We congratulate the publishers and the translator upon bringing so exquisite a work before the medical public at so moderate a price. But the medical student, who would gain the most instruction from it, is, from our experience, unlikely to invest in what is an extra text-book, while the laboratory worker is apt to prefer the study of the material direct, nor does he need illustrations of the more common processes. It is the man in practice who desires to keep abreast in pathological histology, and the teacher in subjects other than pathology, who will find this little handbook a most valuable work of reference and to them it can be cordially recommended.

*J. G. A.*

A TEXT-BOOK OF PATHOLOGY. By ALFRED STENGEL, M.D., Professor of Clinical Medicine, University of Pennsylvania. Third Edition, revised. Pp. 873. 372 illustrations. Philadelphia and London, W. B. Saunders & Co., 1900. Canadian Agents, J. A. Carveth & Co., Toronto, Ont. Price, \$5.00.

We are pleased to see that this excellent work is gaining the appreciation it deserves. As a text-book of special pathology of the various systems, we know of nothing which in the same number of pages brings forward so clearly and concisely the main facts of special pathology and those well up to date. In this new edition an attempt has been made to discuss more fully what it is usual now to speak of as pathological physiology, and to make the work not so purely one upon morbid anatomy. Even more attention it seems to us might be given to this most important branch of the subject. In regard to the first portion of the work, that upon general pathology, we still think that this is inadequately treated. So far as it goes, however, it is very clear and sound. For our own part we hold strongly that the full consideration of the general processes of disease is essential for a broad and sound comprehension of these processes as they affect the individual tissues.

*J. G. A.*

A TEXT-BOOK OF EMBRYOLOGY FOR STUDENTS OF MEDICINE. By J. C. HEISLER, M.D., Professor of Anatomy, Medico-Chirurgical College, Philadelphia. Pp. 405; 190 illustrations; 26 colored. Philadelphia, W. B. Saunders, 1899. Price, \$2.50.

We cordially welcome the appearance of this clear and most useful text-book of embryology, designed as it is specially for the use of students of medicine. While possibly we may differ from the author with re-



gard to one or two points, the arrangement of the work is so excellent and the information is given in so clear a style, that it fills a gap among the text-books and should become immediately popular. There has long been a need for a work of this nature. Minot's and the larger text-books are all too large and too detailed for the ordinary medical student, the sections upon embryology in Quain's and other anatomies are altogether too condensed. This work appears to strike the happy mean and to contain all that is essential to the ordinary student, placed in such a way as he can readily grasp it, while the abundant illustrations most materially aid in comprehending the succession of changes which occur in the development of each part and system of the body.

A TEXT-BOOK UPON THE PATHOGENIC BACTERIA, FOR STUDENTS OF MEDICINE AND PHYSICIANS. By JOSEPH MCFARLAND, M.D., Professor of Pathology, Medico-Chirurgical College, Philadelphia, and Pathologist to Medico-Chirurgical Hospital, Philadelphia. Third Edition, revised and enlarged. Pp. 621; 124 illustrations. Philadelphia, W. B. Saunders & Co., 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$3.25.

This work shows a steady improvement in each of its rapidly succeeding editions, and can be recommended as one of the most satisfactory text-books upon bacteriology for the use of the ordinary medical student. Considerable new matter is introduced in the chapters on tuberculosis, diphtheria, tetanus and plague; the illustrations, largely reproductions of microphotographs, are uniformly clear and good and the style most lucid.

In his preface the author states that "in criticising the book one should not forget that it is upon the pathogenic bacteria \* \* and should not condemn it if it does not contain matter outside of its logical limitations." But to the student, after all, it is not so much what is logical as what is practical, that appeals. We cannot but think that the bacteriological laboratory is the place in which, not only the pathogenic schizomycetes, but also pathogenic microbes of animal origin, are to be studied; that the course in bacteriology is the course in which these, and the pathogenic moulds as well, are most properly dealt with; and that a text-book in bacteriology should not, merely on account of nomenclature and for the sake of logic, fail to include a description of pathogenic microbes in general. Is a separate text-book to be written and obtained by the student upon these other pathogenic microbes? Or where else is the ordinary student to gain his information concerning them? The work needed by the student is not a text-book upon the pathogenic bacteria alone but upon the pathogenic microbes, and the work which best fills the needs of the student is that which includes in

its scope a description of all the most important minute forms of life which are factors in the production of disease. We continue to hope that Dr. McFarland will take this into consideration and will in the next edition add these other chapters, even if logical considerations lead him to alter the title of the work.

*J. G. A.*

**A MANUAL OF MATERIA MEDICA AND PHARMACOLOGY.**—Comprising all Organic and Inorganic Drugs, which are, and have been official in the United States Pharmacopeia, together with Important Allied Species, and Useful Synthetics. Especially Designed for Students of Pharmacy and Medicine. By D. M. R. CULBRETH, Ph. G., M.D., Professor of Botany, Materia Medica, and Pharmacognosy in the Modern College of Pharmacy. Second Edition, enlarged and thoroughly revised. Lea Bros. & Co., Philadelphia and New York.

This work treats of Materia Medica and Pharmacognosy, rather than of Pharmacology, as we, at present, use these terms. The descriptions of the appearance of drugs, their physical properties, and chemical composition are exactly given; their therapeutic applications only in the briefest possible manner. The illustrations are very clear and distinct. While we can cordially recommend the volume to all students of pharmacy, it does not strike us that it will be equally serviceable to the medical student, whose object is to acquaint himself with the physiological action, rather than with the physical properties of remedial agents.

*A. D. B.*

**A PRACTICAL TREATISE ON MATERIA MEDICA AND THERAPEUTICS.** By ROBERTS BARTHOLOW, M.A., M.D., LL.D., Professor Emeritus of Materia Medica, General Therapeutics and Hygiene in the Jefferson Medical College of Philadelphia. Tenth Edition, revised and enlarged. New York, D. Appleton & Co., 1899.

The tenth edition of a work, which has for the past twenty-four years occupied the position of one of the authoritative volumes in this department of medicine, calls for few remarks from the reviewer. The information it conveys is of an eminently practical character; and, while we differ from it as to the value of some of its therapeutic suggestions, we regard the present volume as well able to hold the position gained by its predecessors as one of the most useful which a general practitioner can consult.

The present edition contains a full account of all the more important new synthetic remedies, and is fully up to date on all the subjects on which we have consulted it.

*A. D. B.*

DISEASES OF THE TONGUE.—By HENRY C. BUTLIN, F. R., C.M.S., D.C. L., Surgeon to St. Bartholemew's Hospital, and WALTER G. SPENCER, M.S., M.B., Lond., F.R.C.S., Surgeon to the Westminster Hospital. Cassell and Company, Ltd., London, Paris, New York, and Melbourne, 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$3.25.

This is a valuable addition to surgical literature. As evidence of the appreciation of the thoroughness with which the author has dealt with his subject, may be mentioned the fact that the first edition has been translated into French and German.

The development of the tongue and its vascular and nerve supply are given in the first chapter. The author then gives a very clear description of the congenital defects of the tongue and of the accidents to which the tongue is exposed, together with the proper treatment for these conditions. A protest is entered, very properly, against the all too common division of the frænum in cases of supposed tongue-tie, and mention is made of the unfortunate results from such treatment. Numerous cases have died from after-hæmorrhage, asphyxia from the tongue falling back into the pharynx and obstructing the entrance of air, and from sepsis. Operation for tongue-tie is occasionally required and should then be performed by qualified practitioners only. Many of the accidents have occurred in hands of midwives.

Mr. Butlin's work on the tongue is well known. He is strongly in favour of thorough removal of all lymphatic glands likely to receive infection in all cases, although he advises that this be done at a second operation. He also advocates the removal of half the tongue only in suitable cases. We can cordially recommend the book to all practitioners as well as surgeons.

G. E. A.

ESSENTIALS OF MEDICAL DIAGNOSIS.—By SOLOMON SOLIS-COHEN, M.D., and AUGUSTUS A. ESHNER, M.D. Second Edition, Revised and Enlarged. W. B. Saunders, Philadelphia. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$1.50.

The fact that this book appears in its second edition in so short a time indicates its popularity with the students for whom the writers claim it was primarily designed. Although published as one of Saunders Question Compends, it is a cap. octavo of 417 pages. While there can be but little doubt that when such compends are properly used they may be helpful, yet there is reason to fear that the advice to depend upon the "more elaborate works" is unheeded, under the influence of the temptation to follow categorically the record of signs and symptoms of disease so briefly set down. If we accept any compend, we would be



glad to recommend this to students; but in view of the valuable text-books upon the practice of medicine quite brief enough to be considered consistent with accuracy, it scarcely seems to us that this book is needed.

W. F. H.

ORIGIN AND CHARACTER OF THE BRITISH PEOPLE.—By Nottidge Charles MacNamara, London. Smith, Elder & Co., 1900.

This most instructive work by a well known surgeon is of interest to everyone who delights in anthropology. The author endeavours to show why the nations of the south and west of Ireland differ as regards their character both from Englishmen and Scotchmen. He thinks that the shape of the human skull is the best and only reliable test of race, and he believes with Professor Rhys that "skulls are harder than consonants; and that races lurk behind when languages slip away."

In Great Britain there is a community of the original Iberian population speaking English. He holds that the original inhabitants of Britain were Iberians from the North of Africa, then before the Bronze Age they were invaded by what he calls the Celtic Aryans, and during the Bronze Age a multitude of short, dark, broad-skulled Mongolians from Central Europe emigrated into Great Britain from France. Much later, in the ninth century, the Germanic tribes poured into the south-west of England. These he calls the Teutonic Aryans, for they are of the same Aryan stock which had been for centuries settled in Northern Europe. The Romans did not change the racial character of the inhabitants, though they brought their language, laws and civilization into Britain.

There is one point he dwells on which strikes us as very important at the present time, and the want of which we have felt in Canada, and that is the necessity for having a common language to weld together a nation. He says, "it is a means to a better and fuller understanding between individuals forming the race, it is all-important they should be able to think through the medium of a common language"—and again, "we cannot help feeling that if the inhabitants of the Transvaal and Orange Free State had been thoroughly acquainted with the English language and so with out real sentiments and ideas, they would never have been led by interested persons into the terrible conflict in which they are now engaged." It looks very much as if, when the settlement of affairs in South Africa takes place, the same mistake will be made which was made in Canada, *viz.*, the retention of a dual language.

Mr. MacNamara's book is full of interest and instruction, and well repays perusal. He advances many theories and suggests many new ways of looking at things which "give us pause for thought." The typo-



graphy is excellent and the illustrations clear and good. Every medical man should read this book.

F. J. S.

LEA'S SERIES OF POCKET TEXT-BOOKS.—OBSTETRICS, A MANUAL FOR STUDENTS AND PRACTITIONERS. By DAVID JAMES EVANS, M.D., Lecturer on Obstetrics and Diseases of Infancy, McGill University, Montreal, Canada; Fellow of the Obstetrical Society, London, England.

In his preface the author states that in writing this "pocket text-book his aim has been to supply a short concentrated treatise on the science and art of obstetrics, a work that the student and junior practitioner may find of use in attendance on lectures or in every day practice."

A somewhat careful examination of the work enables us to say with confidence that the author's modest claim has been amply borne out, and that his work is an admirable example of *multum in parvo*. We feel confident that to the medical student of to-day, struggling with his over-crowded curriculum, it is certain to be a great boon so far as his obstetrics is concerned.

The first chapters are devoted to a sketch of menstruation, ovulation and the development of the embryo. The embryological part seems to us especially excellent for the space devoted to it. In the pathology of pregnancy one naturally turns to the chapters of the subjects on which our knowledge is somewhat hazy and practice uncertain. As regards the nausea and vomiting, the author gives a sketch of his views of its exciting cause advanced in a paper read before the Montreal Medico-Chirurgical Society some months ago, and published in this Journal. The cause of this distressing and sometimes dangerous symptom, Dr. Evans believes to be the physiological uterine contractions. In support of his theory the author relates a number of facts in the physiological condition of the gravid uterus, mainly regarding its vascular and nervous supply, and advances certain ingenious arguments. We trust the author will pardon us if we think the question has not yet passed beyond the polemical stage. The medical, regiminal, and what may be called the minor surgical treatment of pernicious vomiting, are admirably sketched, but we think the author somewhat optimistic when he says, "in rare cases it is necessary to induce abortion in order to save the patient's life"; while we agree with him completely when he says that "it is a difficult question to decide just when one is justified in terminating the pregnancy." We believe that the doing of this operation is often too long delayed. This is probably easily explained when one remembers that the majority of cases are first pregnancies and the desire for offspring is intense.

In the pathology of eclampsia the recent views most generally accepted, that a toxæmia is the cause, are briefly but clearly discussed, and the experiments of Bouchard related. It will be remembered that by these experiments Bouchard demonstrated the absence of the normal toxicity of the urine and the presence of toxics in the blood of eclampatics, apparently proving the inefficiency of the liver in the destruction, and of the kidneys and skin in the elimination, of these poisons.

In the treatment of puerperal septic infection we are pleased to note that the author speaks with no uncertain sound concerning serum therapy. It has always seemed to us that the reports of recoveries from this grave condition have proved nothing as regards the efficacy of antistreptococcus serum, and Dr. Evans very truly remarks, that "recent statistics seem to prove that the results thus far obtained by the employment of the serum are not more favourable than those by other methods of treatment." We venture further the opinion that it is by no means free from danger. If employed at all it must be confined to cases proved by bacteriological examination to be purely streptococcus infection. Mention is made of Hirst's proposal to employ nuclein, with a view of producing an artificial leucocytosis, which he thinks gives promising results. From the brevity of the notice with which the author dismisses the subject of hysterectomy in puerperal infection, we conclude that he is not enthusiastic about this drastic practice.

Each of the obstetric operations is described briefly but with admirable clearness. For guidance in the performance of each of the various forceps operations, no obstetrician or gynæcologist need go beyond this little volume. In high forceps operations, we notice that the author endorses the value of the Walcher position.

In his general rules governing the selection of obstetric operations in cases of obstructed labour, we do not think Cæsarean section is allotted a field large enough to please the modern abdominal surgeon. In cities with well equipped hospitals or wherever operators of skill and experience are available, we do think the symphysiotomy and embryotomy should be much more restricted than they have been in favour of Cæsarean section.

In this notice it will be seen that we have touched upon a few only of the subjects treated. We have, nevertheless, examined the whole work, and must repeat that we have nothing but praise for such an admirable combination of conciseness and lucidity. We must confess to have been strongly of the opinion that this class of text-book is much overdone, and have been uncharitable enough to believe that the necessities were much more of the author's than of the already well cared for student and general practitioner. Dr. Evan's book amply dispels all such feeling so far as he is concerned.

The publishers' part of the work is well done. Our only criticism refers to the great weight of the book, which of course is due to the loaded paper on which it is printed. The illustrations number one hundred and forty-nine and are well selected. W. G.

AN AMERICAN TEXT-BOOK OF PHYSIOLOGY.—By Several Writers. Edited by WILLIAM H. HOWELL, Ph.D., M.D., Professor of Physiology in Johns Hopkins University, Baltimore, Md. Second Edition, Revised. Vol. I. Philadelphia, W. B. Saunders & Company, 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$6.00.

This work first appeared in 1896, and for its contents ten of the leading physiologists of the United States, all of them professors in the medical schools of the great republic, were responsible.

The book was avowedly written for students as well as practitioners, and was the first experiment of the kind in the English language, at least, for hitherto all physiological works for students had been the products of the efforts of one, or at most two authors. It is manifestly no easy task, even with so good an editor in chief as Professor Howell, to blend the labours of ten different writers into such a whole as will produce the effect intended on the reader's mind, especially when that reader is an undergraduate student. Such works illustrate admirably the advantages and disadvantages of specialism.

However, the editor states in the preface to the second edition that the work has been a success; but that many teachers have suggested that the size of the work when issued in a single volume was such as to render it inconvenient for daily consultation in the lecture room or laboratory; accordingly, the work will now appear in two volumes, though the total amount of reading matter remains about the same.

The principal change is in the chapter on the nervous system which, with that on muscle and nerve, has been transferred to the second volume; but minor changes, necessary even after the lapse of so short a period as five years, have been made in the several chapters. The editor also considers that he was justified in introducing a brief presentation of some of the elementary conceptions of physiological chemistry, owing to the large part that these views are taking in current discussions in physiological and medical literature.

The index has been revised and amplified, a table of contents has been added to each volume, and many new figures have been introduced. In the first edition, numerous references to the literature were appended in the form of foot-notes, and while they are continued, some of the writers have seen fit to omit references to papers published prior to a certain somewhat recent date. Is not this an arbitrary and doubtful procedure?



About the value of such a book as this for the practitioner and the advanced student there can be no question.

The general make-up of the work is excellent. The fact that such large type has been used deserves especial commendation, we think, seeing how frequently such an important matter is ignored in medical publications, the authors of which are supposed to know the danger to vision of the constant use of reading matter putting an undue strain on the eyes even of the young.

The American Text-Book of Physiology in its present form will unquestionably be more acceptable than ever. W. M.

SAUNDERS' MEDICAL HAND ATLASES.—Atlas and Epitome of Gynaecology. By DR. OSCAR SCHÆFFER, Privat-Dozent of Obstetrics and Gynaecology in the University of Heidelberg. Authorized Translation from the Second Revised and Enlarged German Edition. Edited by Richard C. Norris, A.M., M.D., Surgeon in charge. Preston Retreat, Philadelphia, etc. With 207 coloured illustrations on the 90 plates, and 62 illustrations in the text. Philadelphia, W. B. Saunders & Company, 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$3.50.

This is the volume devoted to gynaecology in the Saunders' reproduction of the celebrated Lehmann Medicinische Handatlanten. Volumes devoted to other departments of medicine have already been noticed in the columns of this Journal.

The editor claims that "the value of this atlas to the medical student and to the general practitioner will be found, not only in the concise explanatory text but in the illustrations." A careful examination of the work, in our opinion, completely justifies the contention. The coloured plates are reproductions of water colour drawings of morbid appearances in the living subject, specimens from operations, and in the autopsy room. The author was at one time an assistant to Prof. Winckel at the Munich Gynaecological Clinic, and warmly acknowledges a debt of gratitude to his former chief for permission to use material and for stimulating counsel. Those who know of Professor Winckel's work on the pathology of the female sexual organs, as shown in his celebrated atlas of photographs, will readily understand this.

To the present second edition new material from the Heidelberg Clinic and Pathological Institute has been added in considerable quantity. While struck with the wonderful fidelity to nature of these pictures, one marvels at the beauty and perfection of the process whereby they can be so accurately reproduced.

Of the morbid conditions thus illustrated may be enumerated, the



displacements and lesions of vagina and uterus, the results of parturition, the various evidences of metritis as shown in the cervix, cancer, sarcoma, myoma and tuberculosis of the uterus. Myoma in its various forms gets a large share of attention. The same may be said of the malignant diseases of the external genitals and of the cervix and body of the uterus. The uterine appendages, however, do not secure quite so much attention, though, considering the size of the work, doubtless the best possible has been done. For the same reason the minute structure is not as well exemplified as is desirable.

All that is claimed for the text is that it is an epitome. It is terse and concise, and so in an admirable way much is said in a few words. In the chapters on treatment the author is distinctly conservative. This seems somewhat remarkable, as one does not usually expect this as a result of a medical education in the atmosphere of continental European clinics. As might have been expected, in a number of instances the methods of treatment advised have a distinctly German character. In such cases the American editor supplements the text with brief descriptions of English and American methods. At the end of the book will be found a therapeutic table, which consists of an alphabetically arranged list of remedies and their uses. To this, no doubt, a young practitioner may often usefully turn.

In all confidence we can most strongly recommend this little book as certain to be most valuable to students and practitioners of the diseases peculiar to women. The fact that it is so cheap will further strongly recommend it.

W. G.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION.—Volume the Eighteenth. Edited by DeForest Willard, M.D., Ph.D., Recorder of the Association. William J. Dornan, Philadelphia, 1900.

The Transactions of the American Surgical Association are always of interest. The annual volume contains the papers of a group of earnest scientific workers who are doing their full share of work, looking towards the advancement of the science of surgery. These papers may be taken as exponents of the most recent views of American surgeons.

The present volume is very largely given up to the surgery of the stomach and duodenum. In his Presidential Address, Dr. Robert F. Weir dealt very fully with "Perforating Ulcer of the Duodenum." Dr. Weir not only gave his own personal experience with this lesion, but the published results of other surgeons. Among others may be mentioned a paper on "Hæmorrhage from Non-perforating Gastric Ulcer," by Rodman, one on "Perforating Gastric Ulcer," by Finney; "Benign Obstruction of the Pylorus," by Kammerer; "The Surgical Treatment

of Simple Dilatation of the Stomach and of Gastropptosis," by Curtis; "The Diagnosis of Cancer of the Stomach," by Hammeter.

Professor Keen read a most instructive paper on "Nephrectomy for a large Aneurysm of the Right Renal Artery with a Résumé of twelve formerly reported cases of Renal Aneurysm," and Professor Warren a most complete and thoughtful paper on "Peritoneal Infection in Typhoid Fever."

The report of Professor White on the present medico-legal status of X-rays is of interest and value to physicians as well as surgeons.

The volume is neatly gotten up and printed on good paper.

*G. E. A.*

A TEXT-BOOK OF PRACTICAL THERAPEUTICS.—With Especial Reference to the Application of Remedial Measures to Disease, and their Employment upon a Rational Basis. By HOBART EMERY HARE, M.D., B.Sc., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Eighth Edition, enlarged, revised and largely rewritten. Lea Bros. & Co., Philadelphia and New York.

In the present edition, this well known work has been thoroughly revised. A description of all the newer therapeutic drugs of value has been added, and a number of wood cuts illustrating the physiological action of the more important drugs have been introduced.

In its present form, this work is one of the most serviceable with which we are acquainted, both for the student, and for the physician. The illustrations, which have been added to the present volume, will, we think, prove of service in fixing many practical facts in the student's mind.

*A. D. B.*

APPENDICITIS AND ITS SURGICAL TREATMENT WITH REPORT OF ONE HUNDRED AND EIGHTY-FIVE OPERATED CASES. By H. COMAN MYNTER, M.D. (Copenhagen), Professor of Clinical Surgery in the University of Buffalo, New York. Third Revised Edition. Philadelphia, J. B. Lippincott Company, London, 1900.

That a third edition of this book has appeared in less than two years after the first is evidence of its usefulness and popularity. The present edition, after giving an interesting historical introduction, takes up the anatomy, histology, etiology and pathology of the appendix and its alterations in disease. The diagnosis is clearly discussed, as well as the symptoms which should enable one to differentiate it from other possible pathological lesions.

The author is a firm believer in early operation, anticipating when possible wide spread infection of the peritoneal cavity. Cathartics are rightly ruled out in all acute cases. They never do any good but sometimes much harm. Dr. Mynter's practice of giving opium in sufficient quantities to relieve pain is deserving of some criticism. It is only in rare instances that the pain is not almost wholly relieved by rest, abstinence from food, and ice or heat, preferably the former, locally. Opium disguises the condition of the patient and, more important still, gives such a feeling of comfort that delay is asked for, or indeed, operation is refused until serious extension of the infective process has occurred. Opium is permissible or allowable only when the pain is unusually severe, or when given for the purpose of arresting peristalsis and thus the diffusion of the poison in cases of perforation, during the time necessary to prepare for operation.

The book is carefully written, deals with the most common and fatal of acute surgical diseases, and is well worthy of a place in every medical library.

*G. E. A.*

AN AMERICAN TEXT-BOOK OF DISEASES OF EYE, EAR, NOSE AND THROAT. Edited by G. E. DE SCHWEINITZ, A.M., M.D., and B. ALEX. RANDALL, A.M., M.D., Ph.D. W. B. Saunders, Philadelphia. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$7.00.

The section of this work devoted to diseases of the nose and throat is, in its entirety, most thorough and complete; each of the subjects being written by authors who are quite conversant with the subject under consideration and generally each article is quite abreast of the work of the present period.

In the chapter devoted to the anatomy of the upper air passages, including the histology and embryology, there are introduced several new anatomical terms which the reviewer thinks only add confusion, rather than light, to the already existing multiplicity of terms. In the chapter devoted to the methods of examination and diagnosis is included a brief description of Kirstein's method of autoscopy.

The subject of the therapeutics and prognosis is very fully considered and from which a great deal of good common sense advice may be gleaned, and it is indeed gratifying to learn that in these days of specialism, when so much is done locally with absolute disregard either of the patients general health or even the individual himself, to find such good advice as is generally given here upon this very subject and the timely advice as to conservative surgical measures.

In the treatment of acute affections of the nose, it is the reviewer's opinion, unfortunately, to find the use of solutions of cocaine advocated,

and although this use is cautiously advised, yet, abolition of the use of such a remedy is preferable, as so many are apt to make use of such in cases not suitable for it; thus some have quite innocently become the victims of such a habit.

On the subject of epistaxis, no mention is made of the use of powdered supra-renal capsule as a hæmostatic, which in the hands of many rhinologists has proved very serviceable. The chapter on chronic affections of the nose is very ably written and the operation (Ashe's) for correction of deviation of the septum, which give such admirable results, is fully described by the author. Diseases of the tonsils, palate and pharynx are fully described and the treatment very complete.

The subject of atrophic rhinitis, the *bête-noir* of all rhinologists, is well considered and good advice given regarding local and general treatment. A subject full of interest is that of diseases of the accessory cavities which is exhaustively dealt with and all the more recent advances as regards operative measures thoroughly described.

Under the subject of acute affections of the larynx and trachea the treatment of diphtheria is considered, and the writer advocates methods, which at this time have been relegated to the past by a majority of practitioners. Antitoxin is only mentioned, but not advised, as the author thinks it is yet only on its trial. This seems hardly credible in the present age, when overwhelming evidence has proved the great benefit which antitoxin gives in such cases and it is indeed gratifying to find the subject more thoroughly dealt with in another chapter, when the full advantages of the use of antitoxin are clearly brought out. Tuberculosis of the air-passages is very exhaustively and interestingly dealt with, and all the consideration thoroughly up to the views of the present day. The subject of neoplasms of the upper air passages is a scholarly article, and largely drawn upon from the writer's extensive experience. Neuroses of the upper air passages are very thoroughly written.

The work closes with a few words on the external operations on the lower air passages (tracheotomy, thyrotomy, pharyngotomy and extirpation and resection of the larynx). It is to be regretted that this interesting and important section should receive such scant consideration as to details of the several operations.

Taken altogether, the part of the work devoted to diseases of the nose and throat may be regarded only as a work of reference, and not one to be recommended in general for either practitioner or student, but for those seeking complete information on any of the diseases under consideration.



So far as the ophthalmological section of this work is concerned we have no hesitancy in giving it a place among the leading text-books on eye-surgery of to-day. It occupies a unique position between the exhaustive works of Græfe and Sceniesch and Oliver and Norris, and the numerous smaller hand-books of which we have at the present time so numerous examples. Nevertheless, the work in conjunction with the other sections may be recommended to the student for help in the acquirement of a knowledge of the special subjects of which it treats and the more so, as it strikes us as being an excellent treatise of reference for him later on in his career as a practitioner; on the other hand the specialist cannot fail to find much that is instructive and helpful in the experiences of the writers—24 in number—who represent the higher works in ophthalmology in America.

The arrangement of the work is excellent, and we do not begrudge the relatively large space which has been devoted to anatomy, physiology and examination methods, believing that a true treatise of these subjects is essential for the specialist and often useful to the practitioner.

All the clinical chapters are handled in a satisfactory manner, though it is evident in places that the confinement of the writer within fixed space-limits has rather hampered the treatment of his subjects.

The section on diseases of the conjunctiva is the most up to date text-book treatment of this advancing field we have yet seen and is equal to what we should expect from an expert bacteriologist like Dr. Weeks. Canadian ophthalmology is ably represented by Dr. Buller who contributes articles rich in clinical experience on diseases of the orbit and the operation treatment of orbital conditions.

In no part is the work more helpful than in the chapter on operations and in this field supplies a distinct want in English ophthalmological literature.

The work is beautifully printed and well illustrated and altogether is most creditable both to the editors and publishers.

## **Society Proceedings.**

### **MONTREAL MEDICO-CHIRURGICAL SOCIETY.**

*Stated Meeting, December 14th, 1900.*

**JAMES PERRIGO M.D., PRESIDENT, IN THE CHAIR.**

DR. JAMES J. BENNY, of Montreal, was elected an ordinary member of the society and Dr. A. G. McAuley of the Royal Victoria Hospital, a temporary member.

#### **Meningitis Complicating Pneumonia.**

DR. J. R. SPIER read the report of a case of pneumonia complicated by meningitis. (See page 16 of the January number.)

THE PRESIDENT had never seen a case of pneumonia where meningitis had occurred as a complication, although he had been led to think of it as a possibility in some cases until prompt resolution of the disease had proved that his impressions were incorrect. He referred to a case, seen some years previously, of pneumonia of both bases, in which the predominant symptom was intense headache. There was no cough but high temperature of  $104^{\circ}$  and upwards for two or three days, and he felt sure that he had to do with a case of acute meningitis, as did also the consultant who was called in. One day the child spat up some rusty sputum, and an examination of the lungs showed inflammation of both bases. As the area of inflammation extended the intense headache disappeared, and the child made a good and rapid recovery. It was well to bear in mind that a great many of the cases of pneumonia in children, the so-called head symptoms were not due to meningitis.

#### **A Case of Spinal Tumour.**

DR. F. MORLEY FRY presented the report of this case. (See page 4 of the January number.)

#### **Vesical Hæmorrhage during Labour.**

DR. G. A. BROWN reported this case which he illustrated by a diagram. (See page 10 of the January number.)

DR. BROWN in reply to two questions by members as to whether there had been any varicose veins seen near the vulva and how he accounted for the hæmorrhage, said he had at the outset concluded that the fall might have had something to do with the hæmorrhage, but as the patient had complained of no symptoms relative to her bladder the day

after, he had come to the conclusion that there must have been some stretching of the bladder, and that probably some of the vessels had given way by the pressure of the gravid uterus. There had certainly been very great tension on the anterior vaginal wall, and the pain in the bladder had been described as of a tearing character. There had been no varicose veins visible around the vulva. The patient was anæmic.

### **Sudden Death in Infancy and Childhood.**

DR. A. E. VIPOND read a paper with this title, which will be found at page 23 of the January number.

DR. BAZIN, in connection with this paper, related the following case:

The patient was a female child, eight months old, which had been brought up on Nestlé's Christie's, and other starchy foods. It was fed at 7 a.m., taking only a small quantity. Half an hour afterwards the child was taken with sharp intense pain, uttering piercing cries. When seen by me, the temperature was normal, the pulse very rapid, 140 to 160. The history, as far as I was able to elicit it, was that the child had been constipated and the night before had been given a teaspoonful of sweet oil, and, as this had had no effect, it was repeated in the early morning, also without result. There had been no vomiting.

The child was lying on the back drawing up the legs, at the same time uttering piercing cries and apparently was suffering from colic. There was no distension of abdomen, the walls being quite flaccid and a good examination could be made. The heart and lungs were apparently normal. It was stated that the child had cried a little during the last two days putting the hand up to the ear. On examination with the mirror, etc., nothing was found to explain any pain. A castor oil enema was given which was retained and a spice poultice was applied over the abdomen. At 12 o'clock the condition was the same, the child crying and getting no rest; a small quantity of the oil came away but no fæces. As nothing more could be made out from the examination and the condition remained the same, I ordered a  $\frac{1}{4}$  grain tablet of morphia in, I think, 12 teaspoonfuls of water, one teaspoonful to be given every two hours till pain was relieved. In consultation with Dr. Blackader, I saw the child again in the evening, at that time temperature was elevated, 101°, the child greatly exhausted and pulse even more rapid and feeble; no further symptoms. The opiate had not relieved the child, the parents had continued it till I should think it had taken about  $\frac{1}{8}$ th grain, except that it was a little listless between the attacks of crying, it showed no effects of the morphia. Breathing was now shallow and slightly more rapid, in the left apex was a fine crepitation with every breath but not at all distinct. Another enema of oil given and retained but without

effect. Next morning, without the development of any more symptoms and with the continuance of this temperature, the child suddenly died about 11 a.m. That evening with Dr. McTaggart's assistance, I held a post mortem, and we examined every part.

The brain was normal, firm consistence ; meninges pale, not at all congested ; both ears perfectly normal ; cribriform plate not at all affected, no meningitis of any nature. Minute section of brain failed to reveal anything abnormal. Lungs beautifully pink especially at this point where crepitation was heard ; pericardium and heart normal ; bladder full of pale limpid urine, no albumin, liver and spleen not enlarged ; pancreas normal ; kidneys and suprarenals apparently normal. The mucosa of the stomach was normal, and the intestines perfectly empty except for a very small quantity of yellowish fluid, and the oil in the rectum. In the small intestine from about 12 inches below the duodenum there were lengths of intestine which were of much smaller calibre than the rest of the intestines. The contents of the bowel, however, could be forced through and there was no mechanical obstruction and nothing at all in the way of congestion. The explanation of the intense pain and death could not be found at all. Whether it was a spasm of the muscular wall of the intestine, causing a certain amount of colic which resulted in death, we could not say. The amount of morphia given would have relieved the spasm. If this were an ante-mortem spasm it remained in spite of the morphia.

The reader of the paper mentioned that in diphtheria fatal paralysis followed in mild cases as well as in severe ones. It has been my experience that this does not occur unless the case has advanced for some time without treatment. I have notes of a case, a nurse, who had the first dose of antitoxine within 4 hours after the appearance of a small point of membrane on one tonsil, another full dose was given in 12 hours and a most malignant diphtheria developed with paralysis 3 weeks later, affecting the four extremities, and lasting a considerable time. she recovered completely, however. I think the neuritis is a sign of the absorption of a considerable amount of toxine from the diphtheritic lesion.

DR. G. A. BROWN had recalled to mind by Dr. Bazin's case, a case of sudden death in a child by intussusception. Where invagination took place high up in the bowel, death was very rapid. In Dr. Bazin's case there might have been this invagination, but on moving the bowel to examine it the invaginated portion might have dropped out. The speaker had seen two cases of sudden death in pericarditis in patients who appeared to be doing well. Sudden death in diphtheria, in his experience, occurred either on the fifth or sixth day, when the mem-



branes were disappearing, or a couple of weeks later. In the epidemic of scarlet fever which occurred eight years ago, he had seen a case die in three hours, and before the rash had appeared, from hyperpyrexia.

DR. J. R. SPIER agreed with Dr. Bazin that sudden death in diphtheria usually occurred in those cases that were neglected for a few days after the onset of the disease, and was due to toxic absorption. He had seen several cases of scarlet fever die within the first twenty-four hours all, he thought, from hyperpyrexia.

DR. ABBOTT asked whether ante-mortem intussusception could be the cause of death and not give rise to distinct symptoms in the intestines.

THE PRESIDENT referred to deaths from overlying of infants, and stated that there was a law in Germany that no child under two years of age was allowed to sleep with its parents. The first case he had seen was a healthy child of about five months, in another case the parents had gone to visit friends, and had taken the baby with them, wrapped up to protect it from the cold. When they reached their destination the baby was dead, smothered.

With regard to Dr. Bazin's case, he hardly thought it was invagination or intussusception, as there would have been some evidence, as Dr. Abbott remarked, in the intestine. He thought kinking of the bowels a more likely explanation. It had been noted by many observers that the pain in this condition, when the kink was high up, was much more severe than from simple invagination. It had also been noted that a slight kink of the bowel causing obstruction and death, might leave very little evidence of its presence post-mortem. A point Dr. Vipond had not touched upon was the occurrence of convulsions in scarlet fever after the rash was out. He had seen three cases of this kind, all fatal, and thought this was always fatal.

DR. VIPOND said that he thought that paralysis was just as likely to follow mild cases of diphtheria as severe ones. The form of sudden death occurring in pneumonia was when a child doing well, perhaps, sits up suddenly contrary to orders, and drops dead.

DR. BAZIN, discussing the points raised with regard to the case he had related, said that the bowel had been most carefully examined, and showed an alternate full and empty condition from the duodenum right down to the ileocaecal valve. Then there had been no vomiting, and there were no signs even of congestion in the bowel. He did not think that intussusception, invagination, or volvulus could have been present.

DR. F. R. ENGLAND said that Dr. Vipond in his paper had gone over pretty much all the causes of sudden death in children, but the speaker did not think that death occurring somewhat unexpectedly from pneumonia, etc., should be classed as sudden, when there was a long period of

previous illness. An infant two days old, under his care, recently had passed from one convulsion into another for about twenty-four hours before it finally died; showing that convulsions do not, as a rule, cause sudden death. Cerebral hæmorrhage had been looked upon as the cause of death in this case. There was a family history of hæmophilia. He had only seen two or three cases of laryngismus stridulus. The rarity of the condition in this country was probably due to the rarity of rachitis. He could call to mind several cases of death from food being drawn into the larynx, and this was a possible explanation of the case of sudden death reported by Dr. Vipond as occurring in a child with enlarged thymus, death having occurred while the child was eating.

## OTTAWA MEDICAL SOCIETY.

This Society met at St. Luke's Hospital on Friday evening, Dec. 14th, 1900, Dr. J. L. Chabot, president, in the chair.

### **Cataract with Delayed Maturation.**

DR. HORSEY showed a case of double cataract with delayed maturation in a woman of 85.—To hasten ripening he had done an iridectomy on the right eye with massage of the lens, and later, a needling. A month ago he had extracted the lens with good result. He proposed to deal with the left eye also if the patient desired it.

### **Treatment of Acute Pneumonia.**

DR. DOWLING read a paper with this title, an account of the results of several years experience of the disease in a large lumbering district. The value of bleeding in the early stages of certain cases was alluded to. He was in the habit of using acetate of ammonia with sweet spirits of nitre in the early stages and cold sponges for the high temperature. For pain, morphine was permissible only at the outset. For restlessness and sleeplessness he recommended the bromides and ice to the head. The careful watching of the pulse was insisted on and reference made to the value of ammonia, strychnine and digitalis in failing heart. Complications and their treatment were mentioned, and several cases of sudden death in young and robust people, some of whom had had but moderately severe attacks, reported.

DR. SMALL referred to the value of a good dose of calomel at the onset of the disease, and to the great importance of an airy room and careful general management throughout the illness. He said that oxygen very often might save life.

DR. COUSENS related a case in a child of 12 with hyperpyrexia, 107° F., near the crisis. It was treated with ice water packs for ten hours without influence upon the temperature. He then removed the pack and used stimulants and hot blankets. The crisis came the next morning.

DR. KIDD referred to a fatal case probably owing to the use of morphine late in the illness.

DR. GORRELL instanced two experiences of several cases of the disease following each other in the same house. He recommended antikamnia and strapping the side for severe pleuritic pain.

DR. J. A. GRANT spoke of a case of pneumonia following grippe in a pregnant woman in whom alarming tachycardia came on. Opium was

used for this with great benefit. The illness came to an end and the child was carried to term.

DR. PREVOST alluded to the progress of treatment during the last thirty years, the knowledge of the course of the fever through Wunderlich's thermometer, the pioneer work of Hughes Bennett in abolishing bleeding as a routine treatment, reduced the mortality from 27 to 10 per cent., and further by using stimulating treatment from 10 to 3 per cent. Dr. Prevost had read a paper on his return from Europe in 1875 in which he advocated the treatment of pneumonia by alcohol. This had given rise to much discussion.

DR. CORMACK recommended Dover's powder as the most valuable form in which to give opium in pneumonia.

DR. GIBSON spoke of the value of paraldehyde as a hyponotic in the disease.

THE PRESIDENT spoke of the necessity of treating each case as it rose as a separate thing by itself according to the indications present.

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The Society met in Water Street Hospital on Friday, December 28, 1900, Dr. J. L. Chabot, President, in the chair.

#### **Appendicitis with Unusual Seat of Pain.**

DR. PREVOST showed an appendix removed that day, much thickened and with two perforations. On admission to St. Luke's Hospital the day before, the patient had had a temperature of 102° F.; pulse of 120. On the right side there was no pain or tenderness on pressure, but severe pain was complained of on the left side. Dulness and rigidity were present over the lower part of the abdomen on both sides. The first attack had been three years before, with pain in the right side and vomiting; one slight attack had taken place before the present attack. Pretty diffuse peritonitis was found over the lower part of the abdomen and the pelvis was full of seropus.

#### **Albuminuria of Pregnancy.**

DR. J. A. GRANT, JR., reported a case of albuminuria of pregnancy in a healthy young primipara. Two grammes of albumin per litre with hyaline and granular casts were first discovered three weeks before confinement. No uræmic symptoms followed and the case did well.

#### **Injury to the Spinal Cord.**

DR. DEWAR showed a youth who two months before had been injured in the back by a falling tree. A week after the accident he had been brought to the hospital suffering from great pain and stiffness of the back, and weakness of the legs. Sensation was not impaired. There was retention of urine, 126 ounces being drawn off on admission.



Power had returned to some extent but spastic symptoms were marked, pointing to an injury to the lateral columns of the cord.

### **Tetany; Report of Two Cases.**

DR. BRADLEY read a paper on tetany, two cases of which had recently come under his notice. One was a woman of 30 with marked gastrectasis and ptosis of the abdominal viscera. When first seen there had been symmetrical and painful contractions of the hands, forearms, and feet; no loss of consciousness; pulse and temperature normal. These lasted one hour and returned in three days with prodromata in the form of occipital headache, numbness in hands and feet, and burning sensation in the bones. After the attack, weakness and staggering gait remained for some time. In two weeks the spasm returned with prostration and hallucinations. Six months later there was another recurrence. The case was likely to do badly.

The second case was in a rickety child of 4 years, which had had a first attack three years before. The present attack came on after a gastro-enteritis of three weeks duration. Tetany continued until three days before death. The larynx was not affected. Dr. Bradley then gave an exhaustive account of the disease.

### **Cases of Nervous Disease.**

DR. MACCARTHY read notes of certain cases of disease of the nervous system.

(1) A case of syringomyelia in a woman of 50, in which the symptoms came on two years before with weakness of the left hand, numbness, tingling and wasting. The same state supervened in the right hand and arm. The claw-like hand, wasted deltoids, projecting scapula, and absence of temperature sense, were noted. The diagnosis was discussed and the pathology demonstrated by microscopic sections of the cord from a case.

(2) A case of syphilis of the brain and cord in a man of 42 with a history of three attacks of gonorrhœa, no chancres, but frequent stomatitis and ulcers on the legs. Two years before he began to have severe headache of the vertex and found his memory and mental faculties failing. Twitching of the right side of the face, ptosis of the right eyelid, girdle pain and difficulty in urinating came on with, finally, incontinence of feces. Under iodide of potash, 50 grains thrice daily, he had greatly improved.

(3) A case of undoubted locomotor ataxia with Romberg's and Argyll-Robertson symptoms, lightning pains, loss of knee-jerks, ataxia, and loss of sexual power. Under potassium iodide for a year he had not improved. Arsenic was given in increasing doses until toxic symptoms occurred, and then strychnine in doses of 1/30 of a grain thrice daily,

hypodermically. He can now walk in the dark and stand a few seconds with his eyes shut. The pains are gone and sexual power is returning. The knee-jerks and pupil phenomena were unchanged.

After some discussion, Drs. Bradley and MacCarthy replied.

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The Society met in St. Luke's Hospital on Friday, January 11, 1901, Dr. Dewar in the chair.

### **Laminectomy.**

DR. J. F. KIDD reported a case of laminectomy in a patient who sustained fracture dislocation of the lumbar spine through 5000 feet of lumber falling on him. The laminae of the first lumbar vertebra were found pressing on the cord and, together with those of the twelfth dorsal, were removed. On the second day the patient could pass urine voluntarily and the legs began to recover tone. In five months he was able to get out of bed. Improvement still continues.

### **Tracheotomy.**

DR. J. D. COURTENAY reported a case of tracheotomy for obstruction, due as it turned out to a glandular abscess. The glands were removed. No tubercle bacilli could be found in the sputum. A week after the operation a piece of calcified cartilage was coughed up. The diagnosis was not clear.

### **Recurrent Otitis Media.**

DR. COURTENAY also showed a case of recurrent otitis media following measles, and resulting in cerebral complications with paralysis of the third nerve and semicoma with spasm. The antrum was found full of pus and a sinus led to the middle fossa. Some denuded bone and much broken down tissue were removed. Ptosis disappeared the same night but the child died.

In this family seven had had measles, and of these, two who had had adenoids removed, did not suffer from otitis media.

### **Pathological Specimens.**

DR. KIDD showed a faecal concretion with the appendix of a patient aged fifteen years from which they had been removed. Pain was complained of at the umbilicus for six weeks before it became localised at McBurney's point. From another case of appendicitis a phosphatic coprolith was shown.

A third specimen was that of a loose body in the knee joint which proved to be a portion of the internal articular cartilage of the femur. There was a history of injury twelve years before.

The Society met in the Water Street Hospital on January 25, 1901, Dr. J. L. Cabot, President, in the chair.

### **Ciliary Spasm.**

DR. HORSEY reported two cases of ciliary spasm in young neurotic girls twelve years of age. They both did well under homatropine. The possibly of damage to such cases through ignorantly prescribing glasses was pointed out.

### **Hæmoglobinuria.**

DR. GIBSON reported a case of hæmoglobinuria in a young woman suffering from la grippe with pneumonia of part of the right lung. The condition was not due to drugs as it was present from the onset of the fever and before remedies had been used. She had made a good recovery from the pneumonia and the urine was almost normal again a fortnight from the beginning of the illness.

### **Hemiplegia.**

DR. GIBSON also showed a case of embolic hemiplegia in a young woman of 22 years with a history of severe rheumatic fever at the age of 10, diphtheria at the age of 12, and recently palpitation and dyspnoea. There was a presystolic murmur. The right leg, arm, face, and speech were all affected suddenly without loss of consciousness or convulsions. Power returned quickly to the leg and gradually to the arm and face. Loss of memory for words was absolute for a few days and now, two months from the onset, speech power was very limited. She can only speak or write very familiar words, but can copy anything written down or say over words spoken to her.

### **Foreign Body in the Abdominal Cavity.**

DR. CHABOT showed a penholder removed from the abdomen of a female patient who had passed it into the bladder to relieve pruritis and frequency of micturition. She was suffering on admission from signs of general peritonitis. Supra-pubic cystotomy was first performed but nothing was found. Laparotomy discovered the foreign body adherent to the intestines and much greenish yellow fluid in the abdomen. Recovery followed under drainage.

### **Treatment of Spinal Deformities by Exercise and Postures.**

DR. R. TAIT MCKENZIE, of Montreal, read a paper with this title. He referred to the sources of spinal deformity through faulty posture, etc., in growing children and traced the development of the vicious changes ensuing. Dr. McKenzie then illustrated these by means of diagrams, and showed upon the living model examples of movements and postures resulting in cure or improvement of the deformity. The demonstration was much enjoyed by all present. A hearty vote of thanks was awarded to Dr. McKenzie on the motion of Dr. Cousens,

## Correspondence.

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### CALEDONIA SPRINGS AS A MEDICAL APPOINTMENT.

*To the Editors of the MONTREAL MEDICAL JOURNAL.*

DEAR SIRS,

To the Medical Practitioner who appreciates the value of an exceptionally fine opportunity to see and study the course of that rebellious and obstreperous malady, rheumatism, and incidentally to obtain about as much pleasure as is afforded at the average summer resort, there is no place that presents a better opportunity than Caledonia Springs—that well known Canadian Spa situate midway between Montreal and Ottawa on the Canadian Pacific Railway's short line.

The curative effect of the Magi Caledonia Waters and Baths is attested by the fact that after a century of quiet and unostentatious existence they not only continue to be as popular as ever but are increasingly so, notwithstanding the many new counter attractions that have grown up; thousands of grateful sufferers, from their own experience of the relief here obtained, bear testimony to the virtues of this time honored institution.

The waters, clear and sparkling, coming from depths of from 150 to 170 ft. are of an even temperature at all seasons of the year and of a constant abundant flow. The several springs comprise saline of different degrees of strength, white sulphur and gaseous waters, alkaline, and all decidedly palatable. Besides their cleansing and tonic effect on the stomach, liver, kidneys and bowels, the waters have an alterative effect on the blood in rheumatism, gout and many of the intractable forms of skin disease; the effect of the hot sulphur baths on rheumatic pains is quite remarkable.

The waters are a veritable boon to the dyspeptic and to the man of sedentary habits or with a tendency to obesity, a fact that is duly appreciated and taken advantage of by many, especially the Clergy. In fact they are truly Nature's cure, but only when guided, directed and applied intelligently.

I have also discovered that patients afflicted with that insufferable disease, hay fever, experience immediate relief, though whether from the change of climate or atmosphere or from any special effect of the Waters, I have not been able to determine, possibly both.



Patients require practically no medicine while undergoing the treatment, though they require constant medical supervision; while the Waters may be used with some degree of impunity, no one who comes to the Springs for treatment can expect to get the greatest benefit otherwise than under the direction and advice of the Resident Physician. The Physician himself should on coming to the Springs, dispossess his mind of the idea that he is merely on a holiday—the importance of his responsibility and trust cannot be over estimated; and while demonstrating the facility with which alcohol in all its forms can be dispensed with here, he should observe the strictest abstinence himself.

The management should pass the guests into the hands of the physician on arrival as his special charge, after which nothing should be done in the way of treatment by the visitors on their own account; a physical examination should be made in each case as to the condition of the heart, lungs, kidneys, personal and family history, etc. In all cases where the slightest symptoms of valvular disease exist or even functional derangement, with or without a tendency to syncope, the case should be watched and examination of the heart made before and after the bath, and the temperature and duration of the bath regulated accordingly. In all cases over forty years of age, the urine should be examined more or less frequently as to the quantity of urea and uric acid excreted and directions given as to diet, ever on the alert for Brights' disease or diabetes. Every case should be an object for daily observation and study and an accurate and minute record of each one kept. This would afford, in time, material for a valuable contribution to the literature of the subject and tend to the general progress of medical science.

In fulfilling his duties, the time of the physician will be fairly well occupied and he will be amply repaid, not only by the satisfaction of duties well and faithfully performed, but by the gratitude of his patients and the fees satisfactorily proportionate to the services rendered.

*W. F. Shaw, M.D.,*

Resident Physician, 1900.

THE

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

EDITED BY

THOS. G. RODDICK,  
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WILLIAM GARDNER,  
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JAMES STEWART,  
J. GEORGE ADAMI,  
G. GORDON CAMPBELL,  
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## THE PRIVATE WARDS QUESTION.

At a recent meeting of the Montreal Medico-Chirurgical Society, a resolution was introduced by one of the members affirming the principle that the privilege of using the Montreal General Hospital private wards should not be restricted as at present to the attending staff of the hospital but should be granted to all physicians in good standing in the city. There appears to be an extraordinary misconception on the part of the mover of this resolution and his backers as to the real position of the medical profession in regard to public hospitals and their management. Let us consider this question in the light of plain facts and common sense.

The public hospitals are, so far as we know, legally chartered institutions, having each its board of governors and of management, who are bound by the most sacred obligations of public morality, to expend the revenues of the hospital, no matter how obtained, in a manner most conducive to the attainment of the objects for which the institution was founded. The board of governors elect from time to time their board of management, and they also elect or appoint the attending medical staff from among such applicants as seem to them best suited for the position. Their right to do this is beyond question. These

then constitute the medical board of the hospital. The board of management and the medical board, then, control and are responsible to the board of governors for the proper management of the hospital. The experience of a century has shown this to be a wise and beneficent arrangement.

The management of a hospital so constituted cannot safely be subjected to outside interference any more than could the management of a bank or insurance company, nor has the outside medical profession any more right to come in and do work in the institution than they have to interfere in the management of a bank or other chartered organization.

The establishment of private wards in a public hospital may or may not be a proper arrangement. If the principle is wrong it cannot be made right by throwing them open to all members of the medical profession, an act which might seriously hamper the hospital management. At present they are simply a convenience to the hospital and entirely under its control. No person entering hospital as a private patient goes there except by his own free will, and knowing that he must conform to the hospital regulations and be placed under the care of some member of the medical staff. If he or his medical or lay advisors do not like this arrangement, they are under no obligation to accept it. A person well enough off to pay for a private ward can always get good accommodation elsewhere by paying for it. When a hospital establishes private wards for the convenience of its attending staff, with the additional object of making money for its own use, just as a boarding house or private hospital might do, this affords no ground whatever for those who are wholly unconnected with the hospital to claim the right of participating in the arrangement. In this particular the hospital is not a charity and is under no obligation to those who contribute towards sustaining its functions as a charity. It would thus appear that medical men not connected with, or actually engaged in carrying on the work of, the hospital, have not the vestige of a claim to participate in the benefits of these private wards.

If a patient takes a private ward he does so either with or without the advice and consent of his usual medical attendant, who knows that for the time he hands over the patient to the hospital medical attendant in the former case, and in the latter he can have no possible say in the matter of all. Where then is the hardship? As a matter of fact the private wards in both our large hospitals are mostly occupied by people coming from a distance, and they are nearly always filled and all in use. Often there are patients on the waiting list. Let us suppose the outsiders were given the privilege sought by this resolution, how many would be likely to get accommodation for their patients in the hospital private

wards, when the ordinary rules of precedence and common courtesy would demand that the attending staff have the first privilege? The private wards of the Montreal General Hospital are about ten or twelve in number, the members of the attending medical staff who give their services gratuitously to the hospital are about twenty; for this they have, then, the privilege of half a private ward each during their time of service. Would it not be an act inexpressibly mean and contemptible to deprive them of this one poor little recognition of their services to the institution and to the public.

It would be interesting to know the real motives of those who pretend so much zeal for the welfare of the public, when there is apparently so little to be gained by the success of their schemes. Their efforts to influence public opinion through the sensational columns of the daily press are, to say the least, undignified and unworthy of a profession supposed to occupy a position above the level of ward politicians. A fair sample of the staff supplied to the public by one of these penny-a-liners is to be seen in the *Daily Herald* of March 1st. His fervent imagination pictures a respectable citizen found unconscious in the street and hurried by the ubiquitous ambulance to the hospital, where he regains consciousness and cries aloud for his own doctor. His prayers are unheeded and he is forced to accept the aid of some monopolist in whom he has no confidence, though he "*pays amply for the privilege of a private ward.*" In the very next paragraph comes the astonishing statement that a private hospital could not compete with the private wards of the Montreal General or Royal-Victoria Hospitals because they would be obliged to charge six or seven dollars for the accommodation these institutions furnish for two or three dollars per diem!! Which statement is correct? As a matter of fact, the hypothetical patient would, on recovering consciousness, thank his stars he had fallen into such good hands, and his convalescence would be cheered by the reflection that he was saving four or five dollars every day of his detention.

One of the worst features of this resolution is that it asks the society as a whole to formulate a request to the authorities in control of the Montreal General Hospital, which has for its object the benefit, real or imaginary, of certain members of the society, to the detriment of other members of the same. There could be no more certain way of creating discord in the society at a time when, as we all know, harmony and unanimity are essential to its existence.

Supposing the resolution were adopted and forwarded to the hospital authorities, what would be the position of the medical board? It would be this. Most of its members are undoubtedly opposed to extending the privilege of using the private wards to the profession at large, but



in maintaining their objection, before the governors of the hospital, these latter could say :—You are members of the Medico-Chirurgical Society, are you not? Yes! Your Society has adopted a resolution approving this change? Yes. Then you are here contesting a measure which you presumably favoured in your medical society! To be consistent these members of the Medico-Chirurgical Society would have no other course open to them than to resign from the society. Is it then the intention to drive these men out of the society? If so, one does not need to be the son of a prophet to tell how this thing will end.

We might suggest, however, a less objectionable way of attaining the pretended object sought by the framers of this resolution than by forcing such a measure against the will of so many members of the society. If there be such an urgent need of private ward accommodation for the general profession, as supporters of this resolution seem to believe, there should be no difficulty in establishing and maintaining a good sized hospital of this kind as a private enterprise, and it is reasonably certain that many members of the society connected with the hospitals would lend their aid in supporting such an institution.

#### NEW BOOKS, ETC., RECEIVED AND NOTED.

*E. H. Colegrove, Chicago. 1900.*

Obstetric Clinic. By Denslow Lewis, Ph.C., M.D., Professor of Gynæcology in the Chicago Polyclinic, etc.

*W. B. Saunders & Company, Philadelphia and New York.*

A Text-Book of Histology, including Microscopic Technique. By A. A. Böhn, M.D., and M. von Davidhoff, M.D. Edited by G. Carl. Huber, M.D. Authorised Translation from the Second Revised German Edition. By Herbert H. Cushing, M.D. 1900.

An American Text-Book of Physiology. Edited by William H. Howell, Ph.D., M.D. Second Edition, Revised. Vol. II. 1901.

*J. B. Lippincott, Philadelphia.*

Appendicitis and its Surgical Treatment. By Herman Mynter, M.D. 1900.

*F. A Davis Company, Philadelphia, New York and Chicago.*

Studies in the Psychology of Sex. By Havelock Ellis. 1901.

A Text-Book of Practical Obstetrics. By Robert H. Grandin, M.D., with the collaboration of George W. Jarman, M.D. Third Edition, Revised and Enlarged. 1900.

A Practical Treatise on Materia Medica and Therapeutics. By John V. Shoemaker, M.D., LL.D. Fifth Edition, thoroughly Revised. 1900.

*Lea Brothers & Co., Philadelphia.*

Progressive Medicine, Volume Q IV. 1900.

A Manual of Materia Medica and Pharmacology. By David M. R. Culbreth, Ph.G., M.D. Second Edition, Enlarged and thoroughly Revised. 1900.

A System of Practical Therapeutics. Edited by Hobart Amory Hare, M.D. Second Edition, Revised and largely Rewritten. Vol. I. 1901.

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No. 3.

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Original Communications.

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TUBERCULOSIS CONFERENCE OF CANADA.

HELD IN THE CONVOCATION HALL OF THE NORMAL SCHOOL,  
OTTAWA, FEBRUARY 14TH, 1901.

*On the call of Their Excellencies the Governor-General and  
Countess of Minto.*

ADDRESS

BY

HIS EXCELLENCY, THE GOVERNOR-GENERAL, THE EARL OF MINTO.

Ladies and Gentlemen,—When I first invited the leading members of the medical profession to meet me here to-day, I did not dare to anticipate anything approaching the influential gathering of distinguished men I now see before me. I am well aware that many of you have travelled great distances at much personal inconvenience, and I can only assure you of my deep appreciation of your support, and of my hope that the expert knowledge you can bring to bear on the subject you have come to discuss, may not only assist to place before the public the immense national importance of the objects we have in view, but will encourage that public to unite in one common effort to defeat the evil which is so surely undermining the health of the people.

It was in September last that during the meeting of the Canadian Medical Association at Ottawa, an Association for the Prevention of Tuberculosis was provisionally organized, and the purpose for which I have asked you to assemble to-day, is to establish that association on a permanent basis, and to discuss the measures best calculated to promote the objects of the association.

The pith of those objects is, I think, expressed in the first resolution on the programme for to-day's meeting: "That it is the duty of every government, municipality and individual citizen to adopt organized

Methods for lessening the spread of disease which is causing directly or indirectly probably one-fifth of the total deaths in the Dominion."

How the association can best attain the aims it has in view is a matter for the experts present here to-day to consider, but whatever conclusion they may come to as to the best means of combating the evil they have to face, the success of their efforts must to a large extent depend on the assistance and goodwill of the public itself. That that public should fully realize the danger which surrounds it, will be one of the main objects of the association.

The miseries of consumption, many of us know too well. The fading away of many a charming young life, the breakdown of many a manly constitution, but I do not know that we have yet looked beyond our individual griefs to realize the ravages of the common enemy.

Even now, we have not perhaps fully accurate data to go on, but we believe that the early settlers on this continent were a healthy race; we are proud of this health-giving Dominion of Canada, and yet we know that this terrible consumptive death rate is steadily increasing.

I am told that 10 years ago the annual deaths from consumption in Ontario were 2,400; in 1899 they were 3,405; from 1887 to 1898 they amounted to 31,699, and I believe the annual estimate now of deaths from the same cause in the whole Dominion is between 7,000 and 8,000.

One very suggestive, and very encouraging piece of information given to me is that over the period I have just quoted to you, viz., from '87 to '98, when the consumption death rate of Ontario amounted to 31,699, deaths from smallpox were only 31.

I say encouraging, because we all know something of the now almost traditional horrors of smallpox, and can gratefully recognize what vaccination, quarantine and reasonable precautions have done for us.

And now science comes to our aid again and tells us, that though the germs of this deadly consumption can be communicated from one person to another, or from animals to human beings, that still it is without doubt a preventable disease; that with certain precautions, ascertained by modern discovery, its inroads can be arrested. These precautions the association will do its best to promulgate.

You are fortunate in Canada in possessing an excellent system for the administration of matters of public health. You have both your provincial and Dominion machinery, the former thoroughly capable of dealing with detailed organization, whilst the latter can do everything to ward off the importation of disease from outside, and can, so to speak, do very much to assist and direct the general policy of the campaign.

I have no intention, gentlemen, of entering into any detailed consideration of the spread of consumption or the manner in which your future

labours should be conducted. In the presence of so many experts it would, I feel, be out of place for me to do so. My personal object in asking you to meet me here to-day, is to join with you as the leading representatives of the medical profession, in pressing upon the people of Canada the urgent necessity of combating the danger which besets them. The task before you is not an easy one, but I have no doubt you will determine that the battle must be won. Look back at the medical and surgical triumphs of last century, and remember that we have now to a great extent passed the age of research, and stand where scientific knowledge gives us the power to act. I hope, gentlemen, that, possessed as you are of that scientific knowledge, the work you have so patriotically undertaken may, as years go on, do much to contribute to the health and happiness of your fellow countrymen.

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### ADDRESS

BY

SIR JAMES GRANT, M.D., K.C.M.G.

The object in view by His Excellency in calling you here to-day is no doubt well known. This is the initial stage of a new century, the progress and advancement of which cannot be better marked than by the guidance and direction of our people in matters of public health. Conventions of a like character are now being held in many of the great centres of the world, and the present effort of His Excellency to give a helping hand to the people of Canada, in order to stay the spread of tuberculosis, cannot but be accepted with feelings of thankfulness and gratitude from ocean to ocean.

It is a well known fact that already two distinct races have passed away on the North American continent, and there is little left as to their history but mounds in the West and vestiges in Florida, as records of the past.

The acceptance of any great truth in science generally is proverbially slow and gradual as to recognition. Antiseptic surgery was fully twenty years leading to victory. To-day we are nearing the twentieth year of the discovery by Dr. Koch of the germ of tuberculosis, which for really practical results has no equal in the past century. By the present congress we have now entered on the economic stage, in order to demonstrate beyond a doubt the aim and object of the noble and philanthropic work now undertaken. By public hygiene within the past fifty years, a great change has taken place in the reduction of the death rate from such diseases as cholera and yellow fever. "The White Plague," consumption, is without doubt the scourge of our present race, destroying more than 5,000,000 annually. The yearly death rate in Canada is now



estimated at between 7,000 and 8,000. In the neighbouring republic, the fatality from this disease is, by the best authorities, rated at 150,000 annually. In Great Britain and the Continent the results from this malady are not encouraging. Do not such records touch the sensibilities of all concerned? We are here to-day representing the homes and firesides of our Canadian people, to consider what can be done under the trying circumstances. The national and civic interest in this subject, aroused within the past few years, gives evidence of the determination to stamp out tuberculosis as far as possible. Our ideas of this disease have changed from heredity and incurability to communicability and curability, thanks to the marked progress of scientific investigation. The prevalence of this disease among the poorer classes in small houses, without adequate nursing or physicians to guide and direct them, and frequently shut out from general hospitals owing to the danger of communication and the want of special space, develops a most difficult and trying problem that demands immediate solution.

A series of resolutions has been carefully formulated and is now to be presented, taking up *seriatim* the chief points for consideration; and I feel confident that in the hands of many of the master minds of the profession in Canada, as well as lay members of well-known practical ability in the affairs of everyday life, great good will result from the untiring efforts of His Excellency to guard the best interests of our people.

#### **Resolution No. I.**

Whereas, in view of the general prevalence of Tuberculosis in Canada, and of the very high mortality caused by the disease; in view of the communicable nature of the same, and of the constant and continued dangers caused by its chronic and usually prolonged course, during which a patient may infect not only one house but many other places of temporary or permanent abode; and especially in view of scientific facts going to show the curability as well as the moderately contagious character of the disease in its early stages:—

Resolved, that in the opinion of this Conference, which represents the Governments and people of every part of Canada, it is the duty of every Government, Municipality, and individual citizen to adopt organized methods for lessening the spread of a disease which is causing directly or indirectly probably one-fifth of the total deaths in the Dominion.

## ADDRESS

BY

JAMES STEWART, M.D.,

Professor of Medicine and Clinical Medicine, McGill University ; Physician to the Royal Victoria Hospital, Montreal.

The first resolution on the paper before us deals essentially with the measures which should be adopted to lessen and prevent the spread of tuberculosis. Scientific medicine has shown clearly and indisputably the cause of this widespread disease, and has indicated how it is to be lessened and, possibly, entirely eradicated. To accomplish this end there must be a combined effort on the part, not only of general and local governing bodies, but also of individuals generally.

There can be no doubt that it is the duty of the government of all civilized communities to safeguard the lives of its citizens. This is stipulated in the fundamental laws of that great country to which we have the honour to belong. Tuberculosis in its manifold manifestations is the most potent cause of misery and death, and yet how little have been the efforts made by any government to stamp it out. What untold sums are spent and how many valuable lives are lost in defending and spreading the business interests of the nations, and in upholding national honour and national pride! There are signs, however, of an awakening in many places, and this meeting is an evidence of that, and will, we all hope, lead to some measures of practical reform of a public character.

Before much can be accomplished, people generally must be educated up to a clear knowledge of what tuberculosis is and how it is to be lessened. Government can very rarely legislate beyond the average of intelligence. The medical profession for many years now have been doing a great deal to inculcate into the minds of people what tuberculosis is, and the value of fresh air in its prevention and cure. Individual efforts of this kind would have to extend over a long period before there would be a general recognition of the facts. What is wanted is the powerful and widespread influence of the public press, the greatest lever for banishing ignorance, when used rightly. A combined effort of the public press for a short time, would do much more than the individual efforts of decades. We want, however, a pure press. We do not want, for instance, an article in one part of a public newspaper pointing out the true nature and treatment of tuberculosis, while another part of the same sheet is given over to some quack's advertisement, pretending to cure the disease. Are there any newspapers in Canada to-day that do not contain advertisements of alleged cures of tuberculosis?

The most important measure for the prevention of tuberculosis is the

establishment of homes and sanatoria for the poor. Sanatoria for cases of incipient disease, and homes for advanced cases, where a cure is improbable. This is a duty devolving on the State. The State, through negligence, has been the means of allowing a preventible disease to have full sway. The State owes it to the victim of tuberculosis to help him to save his life, and the sanatorium treatment offers the best means of accomplishing this. In Germany, sanatoria for poor people afflicted with tuberculosis have been in use for several years. One of the best known is that at Goerbersdorf in Silesia. In 1899, 881 patients were treated at this place, the expenses in 774 cases being borne by insurance associations. The societies in which the German workman is insured consider it a wise policy to pay the expenses of those insured who have become tuberculous. They find this infinitely cheaper than allowing the patient to have his own way. This fact is a strong tribute to the good results obtained at the sanatoria. About three months is the period looked upon as being necessary to effect a cure, or rather to place the person in a position, that he can afterwards continue the treatment and do work at the same time. After a stay of three months, fully 75 per cent. were able to resume their work. The investigations made at this hospital into the duration of the good results of the treatment are most interesting and instructive. Of 200 patients treated during the year 1896, 89 per cent. were able to resume their work after their stay at Goebersdorf ; but as a result of subsequent careful inquiries, only 56 per cent. could be ascertained to be at work in 1898 ; in the following year, 46 per cent., and in 1900, 40 per cent. were still in active work. Such figures are of great value in regard to the question of sanatorium treatment, and it is to be hoped that more will be forthcoming.

Homes for cases of advanced tuberculosis are urgently needed. Such cases rarely recover, but everyone in that state has a right to demand that they should have all the advantages that modern scientific medicine can bring to bear, not only in the alleviation of their sufferings, but in the possible arrest of their disease. Such patients (I refer to the incurable cases) are in a certain sense virtually prisoners, and suffer both mentally and physically as a result of their affliction. The least the community can do for them, is to ensure them all the advantages of proper treatment.

In this great question there is another important particular in which it is the duty of the government to step in, that is, the enactment of laws that will prevent those afflicted with tuberculosis from working at trades in which there is a danger of contamination of food and clothing. To go to the extreme of preventing the tuberculous from all occupation, would neither be practical nor wise. Whether it is practical or not to

pension tuberculous subjects is a question rather for the legal than the medical profession.

### **Resolution No. II.**

Whereas, the British North American Act places the duty of legislating in regard to municipal health matters, upon the various Provinces of Canada:—

Resolved, that this Conference does especially urge upon those Governments, and all Municipal Councils and Boards of Health, the enactment of such legislation as will,—

1. Encourage the notification of all cases of tuberculosis,
2. Tend to prevent the spread of infection through expectorating in public buildings, conveyances and private dwellings,
3. Extend the inspection of places where work-people assemble, with a view to improving their ventilation, lighting, and general sanitation,
4. Assist in preventing the spread of the disease through milk and meat of animals,
5. Aid in providing some scheme, such as that placed on the Statutes of Ontario in 1900, whereby organized effort of the people may be assisted by Government and Municipal aid in providing Sanatoria or "Homes," where the curable may be given an opportunity to recover, and the advanced cases cared for with comfort to themselves and with freedom of danger to those in the homes to which they belong.

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### **ADDRESS**

BY

J. G. ADAMI, M.D.

Professor of Pathology, McGill University, Montreal.

It is not for me this afternoon, professor of the science of medicine though I be, to take up the well worn theme of the nature of tuberculosis, to demonstrate once again how this disease is due to the entrance into and action within the body of a minute living organism—not for me to discuss here the communicability of the disease from man to man, from animal to animal, and from one species to another. We accept this and the Government already through its Orders in Council has accepted this. Tuberculosis is an infectious disease and as such we know that it is a preventible disease. In the words of him whom now we hail as King, uttered in the course of that broad minded address with which he opened the International Congress of Hygiene in London in 1891, words which it was my privilege to hear, "If preventible, why not prevented."



At its morning session this Conference has by resolution urged upon the various Provincial Governments of this Dominion, the enactment of such legislation as will tend to prevent the spread of tuberculosis. We have now to ask : Can the Federal Government help on the good work and if so by what means ? Finding that there are means whereby it can aid in the prevention of tuberculosis, it behoves us to employ our united efforts to induce the Premier, the members of his cabinet and the members of both Houses of Parliament, to undertake such legislation as, affecting the whole Dominion, shall in its turn surely diminish the burden laid upon the progress of our country by this scourge.

Now, gentlemen, as it has already been pointed out, the provisions of the British North America Act place the duty of legislating upon municipal health matters in the hands of the various provinces, and in the prevention of tuberculosis, as in almost every other matter connected with the health of the people, there is an ever present difficulty in defining with exactitude what is municipal and what more than municipal. It may, that is, be argued that all legislation bearing upon the tuberculous patient, whereby he is rendered less dangerous to his neighbours, is strictly a concern of the different provincial governments, that it is the duty of the municipality, if I may so express it, to look after the prevention of the entry and spread of an infectious disease in its midst, and that so the Federal Government would trespass upon the prerogatives of the provinces in venturing to enact general legislation directed to the stamping out of this or other disease.

Happily—if happily be not too grim a term—the very prevalence of the scourge throughout our country from one ocean to the other elevates this campaign against it, to a more than provincial dignity. Tuberculosis is a disease confronting and menacing the whole nation and the eradication of tuberculosis is a national concern. He would be too provincial, too contemptible in his narrowness, who would raise his voice in opposition to any well-considered scheme whereby the Federal Government could lessen the incidence of the disease, could improve the condition of our people, could add to the years and productivity of the average Canadian, and could better our position as a race. He again deserves no consideration, and in the certainty of our present knowledge his opposition must be regarded with deserved suspicion, who opposes plans of the Federal Government to arrest the extension of tuberculosis among our cattle, plans which, pursued actively in other countries, have been of proved efficiency ; plans which by stamping out tuberculosis would improve the market value of our cattle and make Canada the premier breeding ground of the world for high class cattle unsullied by disease ; who, in short, seeks to hinder the government from benefiting

that class of our community which—and not the miners of the Klondyke, the smelters of Cape Breton, the manufacturers of Quebec and Ontario, or the dealers in cattle across the line—is and must continue to be the mainstay of Canadian prosperity. I mean the Canadian farmers.

As I have pointed out elsewhere, the practical eradication of bovine tuberculosis in Canada, is no vain imagining. In Denmark, already, within a few years, the prevalence of tuberculosis in cattle has been reduced from 40 to 23.9 per cent. In Canada the disease has as yet gained little foothold. All the information in our possession indicates that its prevalence is less than 1 per cent. It would thus require a relatively small sum for our Government to make bovine tuberculosis practically unknown. There is no other country so favorably situated. Denmark has found its heroic effort a very heavy labor; it, as I say, had 40 per cent. of its cattle affected. It has afforded the outlay and is already reaping the benefit. We must do the same. We must do this from economic reasons because of the terrible loss which the spread of tuberculosis would surely bring upon our agricultural community. There is no question that with increased intercourse tuberculosis has spread rapidly in the Eastern States during the last 15 years. This disease, it is estimated, causes at the present time the annual loss of \$18,000,000 in Germany alone, and with this the absolute ruin of many individuals. Nor is this the only reason. The very fact that in Great Britain, where tuberculosis has during the last 30 years decreased marvellously, no decrease has taken place in intestinal tuberculosis in young children, indicates that in these children there is some cause at work not effective at other life periods and, by exclusion, this other cause can only be the drinking of milk from tuberculous cattle. I do not say—I do not believe—that in Canada with the rareness of bovine tuberculosis in general and with the extraordinary rarity of the most dangerous form, namely, tuberculosis of the mammary glands, we have at the present moment very much to fear on this account. Nevertheless, there must be individual cases of the spread of the disease from cattle to man, and it is our duty as a people to eradicate tuberculosis in cattle lest, spreading, the little children becomes exposed to danger.

But here I am allowing myself to digress from the strict lines of my main contention, which is, that this prevention of tuberculosis is a national matter, one fraught with as great benefit as we can well imagine to the health and prosperity of the country. What we have now to determine is how far can the Government proceed in the attempt to repress tuberculosis. It seems to me that the parts which can be played by the federal and provincial governments in this matter can best be indicated,

say, by the parable of the departmental store. It is not to be thought of that he who is the head of one of those huge concerns, transacts every item of the business of the store; it is left to the chiefs of the different departments to overlook and to transact the main business; indeed, each department is to a large extent autonomous and the success of each depends upon the capacity of its manager who superintends the buying in supplies, determines the price to be marked upon the various goods and is responsible for keeping his department in good and attractive order and so on. But there are certain powers which obviously these heads of departments cannot possess. The manager of one section cannot be allowed so to conduct his department as to cut into the business of and be detrimental to another department of the store. That, the head of the business must immediately prevent. While the departmental chief is responsible for the good health and condition of his staff and can order home any employee who appears to be in bad health, he, nevertheless, cannot run his department upon hygienic principles different from that of the establishment as a whole. He may open or close the windows and doors of his special department to a certain extent, so far as he thinks this improves the condition of that department, but the moment his methods incommode other parts of the establishment he is liable to be called to order, and obviously the main process of ventilating and warming the establishment as a whole must be under central control.

So it is in matters of health, the individual provinces have the right to make regulations affecting the health and welfare of the people inhabiting those provinces, but the moment such local legislation, by excess or defect, threatens the health of other provinces, it is in the power of the Federal Government, for the benefit of the country at large, to intervene and establish legislation which will prevent such harm being done. So it is that certain hygienic legislation of benefit to the country as a whole, must be undertaken by the Federal Government and by that Government alone. And this is clearly recognised. Quarantine and the inspection of individuals entering the country are a Federal matter, so again is the inspection and testing of imported animals to prevent the entrance of disease into the country as a whole. So again, wandering a little farther afield to illustrate the necessary power of the Federal Government, are the taking of the census and the regulation of the means of communication between the different provinces, within its power and, to give another example, the establishment of experimental farms in various regions of the Dominion. This last, it should be clearly understood, is not primarily for the benefit of the immediate localities in which those farms are situated, but for the broader purpose



of gaining a knowledge of the resources of the Dominion—for the benefit of the country and of its people in general.

Grasping these general ideas, we gain a knowledge of what we are justified in asking the central Government to undertake in support of our endeavors to stamp out tuberculosis. We are justified in asking it—nay, we must ask it,—to introduce such measures of a broad nature applicable to the whole country as shall tend generally to reduce the incidence of the disease, measures which if left to the initiative of the different provinces to introduce would be stultified and rendered of no avail should one or more province neglect to enter them upon their statute books.

And this afternoon we are, I hope, to ask the Federal Government to introduce broad measures which shall be of benefit to the country at large, which cannot well be left in the hands of the individual provinces. Thus, for example, the Government has already established by-laws tending to prevent the entrance of tuberculous cattle into the country, and we would ask the Government to give even greater powers to its officers to inspect our borders. What is the use of our attempting local or Federal legislation against tuberculosis in cattle, if it is still possible for diseased animals to be continually dribbling into Canada and becoming mixed with and infecting our herds from one end of the country to the other. I hope that Dr. McEachran the head of the Dominion Veterinary Service, will address you upon this matter.

Let me repeat, the Government already possesses and uses this power of inspecting and condemning imported animals suffering from tuberculosis, and if this be so, *a fortiori*, we can call upon the Government to prevent the entrance into the country of human beings, of new settlers showing signs of the disease. While we desire to see Canada growing, and while we seek a larger population, what we want here is an infusion of strong healthy blood. We want no weaklings to be an incubus and worse. We must discourage the admission of weaklings and of those who surely will spread pestilence among us.

I have already stated that the Government has the right to ordain a census and a registration of all the inhabitants of the country. Those same rights surely permit the Government to supervise and to a certain extent control, the health statistics of Canada at large. The health statistics of the different provinces must, I need not say, be left in the hands of the Registrars-General of those provinces, but it is within the power of the central Government to demand periodical returns with regard to the health of the provinces, and so of the country at large, and to exact that these returns be as nearly as possible accurate. For us to know how and where to fight this foe, it is a matter of supreme im-



portance that we should know where tuberculosis exacts the greatest number of victims, what are the unhealthy zones in our country, and what occupations are carried on in such a way that tuberculosis claims an excessive proportion of the deaths occurring among those employed in such occupations ; in order, that is, to know how to fight tuberculosis and to know also where to fight it, a well organised series of reports from all the provinces becomes essential.

In the third place, just as the central Government has established experimental farms in various regions to discover the value of the soils of those regions, to see what will best grow there, so, surely, we can call upon it to aid in establishing sanatoria in each of several typical Canadian climes in which the therapeutic effects of those climes may be scientifically studied and the results published for the information of the general public. One of the great advances made during the last few years has been this recognition that it is not necessary to send the tuberculous patient far from home, to send him on a long sea voyage to the antipodes, or to banish him to the high Alps: rest, good food, sunshine and life in the open air, sheltered from cold winds, will bring back health to the sufferer who is not far gone in the disease. So it is that tuberculous patients can be treated even in their own homes, or certainly in the outskirts of our large cities.

While this is the case, it is equally certain that some climates are more favorable to certain classes of cases than are others ; that cases so far advanced that death in the near future is a certainty in certain climates, if transported to other climates, gain arrest of the disease and long years of usefulness. Altitude, for example, is not all important but it would seem clearly to be a very material aid in the cure : a moderately damp climate is not by any means necessarily fatal but certainly a dry climate and absence of any rapid and extreme changes of temperature cause the health of the patient to improve more rapidly.

I have studied the results obtained in the east at moderate elevations, such as occur in the Adirondacks and the Laurentian Mountains at St. Agathe, and have no hesitation in stating that the results obtained there in the treatment of tuberculous patients are wonderful. The good results obtained in this province at Muskoka are doubtless familiar to all here. I have studied further the conditions obtaining in the dry belt of British Columbia, in the Kamloops district, and the results there appear to be even more wonderful. What we want is, that sanatoria be established throughout Canada in each province and district, and that they be run according to some accepted general plan, so that we may know how best to arrest and to cure the ravages of this disease in different individuals. It is only by the aid of the Federal Government that we can gain uniformity of observation.

And lastly, as the Federal Government has of necessity large powers in legislating with respect to railway companies, whose operations are not provincial but are continental, so for the sake of those of us who are free from this scourge, we have a right to ask the Government to make arrangements with the different railway companies for our protection, so that those who are obviously suffering from the disease and are discharging as they cough, as Dr. Nuttall has shown, actual billions of tubercle bacilli in the twenty-four hours, and thus are constantly in danger of infecting the railway coaches,—we have the right to ask that the Government makes arrangements with the railway companies to segregate these individuals from the rest of the travelling public, and as it is well that these patients be not kept in the midst of the general population, and that they be encouraged to go to sanatoria and hospitals that there be provided special facilities for their transportation.

I only trust that in briefly defining these points in which we can ask the Government to help us, I have not stolen the thunder of those who are to follow.

Do not think that this is the sum total of all that we can logically ask the Government to do. For my own part, for example, I am very strongly of opinion that the Government should make an experiment in a well defined area to demonstrate that tuberculosis can be wholly eradicated from our herds. I long to see the Government joining hands with Prince Edward Island, which is certainly a well defined and well cut off area, in aiding the farmers there so to weed out infected cattle from their herds, that there be not a single case of the disease in the whole island. This would be a magnificent object lesson and one well worth the small sum it would cost to the central Government. However, we must not now bring forward too many schemes. We can, I believe, reasonably ask the Government to take steps along the paths already indicated and I would therefore propose the following resolution:—

### **Resolution No. III.**

*Whereas* the Constitution of the Dominion of Canada especially delegates to the Federal Government general quarantine in matters of public health, both of men and animals, as well as matters of statistics; and in view of the fact that in tuberculosis we are dealing with a disease which not only lessens national prosperity through the loss of lives, but also by enormous expenditure through sickness and loss of labor.

*Resolved*, that it is the view of this Conference that in a disease whose influence extends from questions of the inspection of immigrants to that of imported cattle, and affects the output of our farms and of our factories, the Federal Government may greatly assist in the fight against tuberculosis by:—

1. Preventing the entrance into the country of tuberculized immigrants and tuberculized cattle.
2. Arranging with the Registrars General of the provinces for a system of Federal Health Statistics of deaths.
3. Establishing a sanatorium in each of several typical Canadian climates, where under careful medical supervision the therapeutic effects of dry or moist, high or low, forest or prairie climates may be scientifically studied and the results published for the information of the general public.
4. Making an annual grant for the preparation and distribution of literature regarding the means of prevention and cure of tuberculosis; and for adopting such other measures as will bring the objects of this Conference before those individuals and corporations whose privilege and interest it will be to encourage the work.

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## ADDRESS

BY

PROF. MCEACHRAN, D.V.S.

### WHY IMPORTED CATTLE SHOULD BE TESTED BY TUBERCULIN.

The necessity for enlightening the masses on a subject which has not only an important bearing on public health, but touches directly our agricultural and commercial prosperity—is, I am glad to see, at last dawning on the minds of all classes among all nations.

The close relationship, if not actual identity, between tuberculosis in men and animals, and the many ways by which the disease is conveyed from one to another, not only of the same species, but from one species to another, have all been carefully studied, experimented on, and the facts published by successive scientists, beginning with M. Viseur, M. Villimin and Prof. Chauveau in France, Gerlach and Bollinger in Germany and several others, over thirty years ago and up to the present day, when its importance calls forth the combined wisdom and social and political influence throughout the civilized world. In July, 1890, a Royal Commission was appointed by our late Gracious Majesty “to inquire and report what is the effect if any of food derived from tuberculous animals on human health, and if prejudicial, what are the circumstances and conditions with regard to the tuberculosis in the animals which produce that effect upon man.” Recently an International Congress against tuberculosis was held at Berlin. The deliberations of the VIIth International Veterinary Congress held two years ago at Baden Baden (which I had the privilege of attending), were largely taken up with this subject. During the past year various congresses were held throughout the United States, notably the Des Moines, Iowa, Tuber-

culosis Convention. The British Congress on Tuberculosis, which was initiated by His Gracious Majesty King Edward and at which he had intended to preside, is called to meet on July 22nd. Nearly every country in the civilized world has instituted scientific inquiry, published reports and bulletins on the subject, and in some, much useful legislation has been enacted and large sums of money voted to combat and arrest the spread of this plague of man and beast.

Canada, therefore, is to be congratulated on not being behind other countries in this matter, and the condition of Canada in relation to this disease is such as to require active co-operation. Therefore, the present meeting is most opportune, and much lasting good must follow the distribution among the people of the views enunciated here to-day.

Those of us who are familiar with Canada from ocean to ocean know that, of the whole vast British Empire, there is no large area as suitable for stock raising in all its branches; whether we consider the rich arable and pasture lands of our older provinces, or the great plains of the west and foothill country of the Rocky Mountains, we have a pastoral heritage the world little dreams of—in extent, soil, nutritive quality of the grasses, abundance and purity of the waters, and climate favorable for profitable production of animals and their economic products.

A rough estimate of the numbers and values of the live stock, which is approximative only, will show how valuable this branch of Canadian industry is even now.

|                                      |               |
|--------------------------------------|---------------|
| Cattle, say 4,500,000, value.. . . . | \$90,000,000  |
| Horses, say 1,500,000.. . . .        | 60,000,000    |
| Sheep, say 2,500,000.. . . .         | 10,000,000    |
| Swine, say 2,000,000.. . . .         | 8,000,000     |
|                                      | <hr/>         |
|                                      | \$168,000,000 |

The following figures taken from the Minister of Agriculture's report, will show the value of some Canadian Farm Products of the three classes most susceptible to tuberculosis and exported during 1900 :

|                                |              |
|--------------------------------|--------------|
| Cattle.. . . .                 | \$ 9,080,776 |
| Cheese.. . . .                 | 19,856,324   |
| Butter.. . . .                 | 5,122,156    |
| Pork, Bacon and Hams . . . . . | 12,833,034   |
| Eggs.. . . .                   | 1,457,902    |

To these must be added, milk, hides, hoof, horns, poultry, etc., etc.

If our live stock and their products assume such large proportions, and their exportation forms such an important item of our foreign trade now, what may they not reach in the future when, by the rising tide of



immigration which has now set in, the great fertile and grazing regions of which I have spoken are brought under cultivation and made to yield of their abundance?

Such figures will aid us in forming some slight estimate of the great responsibility which rests on the shoulders of those charged by the people to guard and protect them from losses by disease, whether imported or occurring in the country. Such, gentlemen, is the value of our livestock, the health and lives of which are menaced by those who would seek to do away with the only reliable safe-guard against the admission by our quarantines of animals suffering from the preventable disease, viz: testing by tuberculin.

We consider that there is no other large cattle-producing country in which the percentage of tuberculous cattle is so small, and further, that there has been no such marked success anywhere else in getting rid of this disease by methods which have been comparatively inexpensive to the Government or have caused so little inconvenience to those cattle owners who have followed the only wise course, viz: to voluntarily endeavour to get rid of the scourge from their herds.

The plan followed by the Department of Agriculture in Canada is as follows:—When an owner wishes to have his herd tested, he fills up a form furnished him in which he agrees to submit his entire herd to the test and to carry out the quarantine necessary in the case of any animals reacting. The professional service, material and travelling expenses are paid by the Government. The success of this plan will be seen by the rapidly reducing percentage shown during the past three years.

| Number tested.         | Number reacted. |
|------------------------|-----------------|
| 1897-8..... 6,516..... | 412             |
| 1898-9.....16,882..... | 451             |
| 1899-0.....17,785..... | 358             |

When we consider that these figures represent voluntary applications by owners who suspect the existence of disease in their herds, and that the percentage is so small, we are justified in concluding that no such record of health, so far as this disease is concerned, is known elsewhere, and that the continuance of our methods for a few years longer must result in the eradication of this disease from our herds.

In discussing this subject recently with Professor Nocard, the great French scientist, who shares with Bang the reputation of being one of the greatest living authorities on tuberculosis, on my stating that it existed in Canada but as compared to other countries to a very limited extent, and on my asking if he thought that I was too sanguine in believing that if the Government would back me with sufficient money, I could in five years eradicate the disease from Canada, he very em-

phatically said : "Certainly not ; I have no doubt whatever that you can do so. I am certain that in eight years I could with similar assistance rid France of it completely." He highly approved of our idea of first educating the people and of our method of dealing with it in Canada which I explained to him, and he said : "I am sure you will succeed."

In a letter received from Professor Leonard Pearson, Dean of the Faculty of Veterinary Medicine, University of Pennsylvania, a few days ago, he says : "In the *Farming World* published in Toronto I have noticed some comments on the use of tuberculin, and especially a report of a meeting of stock breeders held recently in which the test was discussed and disapproved of. It was unfortunate that the stock breeders of Canada should take such an attitude on this question because it appears to be clear that there is but little tuberculosis among Canadian cattle, and this little could readily be extinguished if the stock breeders would but realize the importance of getting rid of it."

#### THE TUBERCULIN TEST.

It would be superfluous before such a meeting as this to reiterate in your hearing what the whole medical world well knows, viz: that tuberculin which is used for testing cattle (Koch's) is incapable of producing tuberculosis even in the most susceptible animal. We might as reasonably expect to grow barley from injecting whiskey into the ground. Those who object to its use on such ground do so from ignorance of facts.

I would refer those desirous of following up the subject to the *Farmers' Bulletin*, issued by the Department of Agriculture, and to the Departmental Reports for the past and two preceding years.

I will simply say here that the experience of the Cattle Quarantine Officers of the Department of Agriculture warrant us in stating that tuberculin properly used is an almost absolutely reliable test of the existence of tuberculosis in cattle.

Nocard claims that it is absolute, and that tubercle can always be found if a thorough search is made post-mortem. Ostertag, of Berlin, the great German pathologist, is almost as firm a believer in its reliability. Bang is also, but admits a percentage of failures. Dr. Salmon, Dr. Pearson, Dr. Theobald Smith, Prof. James Law, and other United States authorities, have all found by experience that it is reliable in from 95 to 98 per cent.

The following extracts from published opinions by acknowledged authorities may be interesting.

Prof. Nocard, Paris, says :—"We have in tuberculin a *certain* means of making the diagnosis of tuberculosis even when the lesions are quite

recent and very limited." "Everyone admits the exactitude and marvellous precision of the diagnostic indications produced by tuberculin."

Prof. Bang, Copenhagen, says: "To combat the tuberculosis of cattle, clear and well presented information upon the nature of tuberculosis, its modes of infection, and the importance of tuberculin, ought to be spread among the people of the country and of the towns."

Dr. Rudovsky, Brünn, says:—"Considering the extension of bovine tuberculosis and the entirety of the causes which establish its co-relation with human tuberculosis, it is necessary that most effective official measures be taken. It seems that the application of measures for eradication of bovine tuberculosis can be successful only if each case of disease is recognized with certainty, which can only be done by tuberculinization.

To popularize the use of tuberculin, lectures should be delivered and publications issued to acquaint rural populations with the injuries to agriculture arising from the presence of the disease, and to point out the possibility of its eradication with tuberculin and the great results obtained by it."

He further advises that tuberculin ought to be applied by Veterinary surgeons only, and all expenses in relation of disinfection of stables, should be charged to the State.

"Obligation for all owners to comply with the measures necessary, especially those regarding tuberculinization; obligation for breeding societies to have all the stock of their members tested with tuberculin."

Dr. Stubbe, Brussels, says:—

"Slaughter by order of the authorities.

(a) Of all animals clinically affected by tuberculosis.

(b) Of all animals clinically suspected of being affected by tuberculosis, and those having reacted to tuberculin test.

Equitable indemnity to owners.

Advice to be given to the owners to have the animals, which have been in contact with these, subjected to the tuberculin test.

To encourage them to unite to thus make the operation free, and to grant special indemnities when animals that have been tuberculinized and have reacted are slaughtered.

The use of tuberculin ought to be regulated."

The following are the resolutions of the VIIth International Congress of Veterinary Surgeons held at Baden Baden, Germany, from the 7th to 12th August, 1899.

"(1) The prevention of tuberculosis in cattle is urgently needed.

(2) The extinction of bovine tuberculosis on the part of the owners (voluntary extinction) is practicable and should be universally aimed

at. It demands the slaughter of dangerous tuberculous beasts as soon as possible, as well as careful protection of calves and healthy animals from infection.

The voluntary extinction of bovine tuberculosis should be encouraged by the State, through the dissemination of correct views, respecting the character of tuberculosis, respecting the modes of infection and the importance of tuberculin inoculations, and be supported by State grants. The best means hitherto known for the prevention of tuberculosis among domestic animals is tuberculin.

Tuberculin should only be supplied under State control ; in any case it should be given to veterinary surgeons alone.

A State prevention of bovine tuberculosis is thoroughly to be recommended. If it is applied with a certain caution, it can be carried out and will hinder the further increase of the disease and will gradually stop it.

The prevention requires, (a) The obligation of the veterinary surgeon to give the legal notice of any case of proved tuberculosis in the exercise of his practice. (b) The quickest possible slaughter of dangerously tuberclosed animals, particularly those with diseased udders, tuberculosis of the uterus and of the intestines, as well as pulmonary tuberculosis, compensation being granted by the State."

I will conclude these quotations from high scientific authorities by extracting two paragraphs from a bulletin published and distributed under the authority of the Ontario Department of Agriculture in July, 1897, of which the Hon. John Dryden was, as he is now, minister. These opinions, based as they are on long experience as a breeder, and as Minister of Agriculture, should receive full consideration. He says:

"Now that we have found out that in tuberculin we have an admirable means of recognizing tuberculosis, and its application is not attended with any particular danger, the question remains as to how best to use it against tuberculosis.

"First, every herd in the country should be inoculated in a way that will be described, and every cattle owner should see to it that his herd is tested, as in this way only can we expect to be freed from the losses which are constantly taking place on account of this disease, and thus help to put a stop to one source of tuberculosis in man."

"Another point where great care should be exercised is in the purchase of bulls or breeding animals. After your herd is clear of disease you can readily infect the whole herd again by bringing in an animal suffering from tuberculosis.

So one should not purchase an animal without first submitting it to the tuberculin test and proving it free from tuberculosis, or else demand



a certificate that such animal has been so tested recently and found free from disease."

#### WHY ALL IMPORTED CATTLE SHOULD BE TESTED.

No one would be bold enough at the present day to doubt the wisdom of the Canadian Parliament in including tuberculosis in the list of contagious diseases—under the Animals Contagious Diseases Act, as was done on my suggestion in 1886.

Its contagiousness, among cattle, and its intercommunicability between man and animals, are now well understood; therefore, as quarantines are established at our sea ports expressly for preventing contagious disease being imported, it is the duty of officers in charge of such quarantines, to employ every means known to them to discover contagious disease, and prevent its introduction into the country. As tuberculosis can only be discovered by clinical examination in but a very small percentage of cases, but can be discovered by tuberculinization in the most occult cases, it is clearly his duty to employ this means of diagnosis.

When we are aware that this disease exists to an alarming extent in the well-bred herds of Britain, 50 per cent. have been said to be affected; and while we know that tuberculin, honestly used, will not lie, but that its diagnostic value can be nullified or rendered untrustworthy by repeated injections of it, at least until several months have elapsed; we see a further reason why the testing should be done in the Quarantines in Canada.

Dishonest practices are known to have been resorted to, high-priced animals and even herds have been so tampered with in importation to the Argentine Republic, leading to law suits, and culminating in the loss to British breeders of the best market they ever had, or are ever likely to have again. No certificates of testing done in Britain are now accepted by Argentine breeders.

Similar experiences have led the United States Government to prohibit entry of cattle from Britain, without their being tested in their own quarantines, or if imported via Canada, by our Quarantine officers. Unfortunately, with a view to meet the wishes of a few importers during the past two seasons, a compromise was arranged and certificates of specially selected veterinarians were ordered to be accepted in Canada, on which imported cattle are permitted to pass into the country without being tested in the quarantines, the results being most disappointing, as will be seen by referring to the quarantine reports for the past three years.

Several of our importers of undoubted integrity have had foisted on to their agents cattle as free from disease, and certificates and charts of

testing were furnished, yet, on being tested in Canada, it has been found that they were tuberculous.

I have reason to believe, however, that there are men acting as agents for others who are quite willing to speculate in tuberculous cattle, and who make the Canadian quarantines the door through which their doubtful speculations are conducted.

The position is this: tuberculous cattle cannot be admitted to the Argentine Republic, nor to the United States, they can be admitted under present arrangements to Canada. They can therefore be bought cheaply in Britain—they can be sold by auction in Canada or in the United States, so long as they would be admitted through Canada without being tested, netting large profits to the importer, but insuring the future ruin of those who purchased them by infecting their home herds.

The request of these men to do away with testing in quarantine, is as reasonable as it would be for several men to buy up at a cheap price quantities of British beer found to be poisonous from arsenic, and to insist that the Government should instruct their customs and health officers to accept the word of the importers that it was all right; and on no account to test for arsenic, no matter what their suspicions or information may be,—such a procedure were it possible, would create a public outcry at once—yet the only harm likely to follow would be the temporary injury of the business of our home brewers, and the poisoning of a number of people. Not so simple would be the results of the unrestricted importations of tuberculous animals, unfair and injurious competition would injure our home breeders, or those of them who possess healthy herds; but worse still, the disease which now exists to a limited extent only, would be spread far and near among the herds to which they were introduced. Other animals would be attacked, and new foci of infection started, invalids and aged people would be infected. I must not, however, be supposed to insinuate that no cattle free from tuberculosis can be bought in Britain. On the contrary, I believe that if buyers or their agents would take even ordinary business precautions, and buy direct from the breeders, they can do so under every reasonable guarantee of freedom from disease; nor must I be understood to infer that importations are not required, no one knows the necessity for fresh blood in our herds better than I do, having been breeding extensively for twenty years: I would urge that the Government be requested to encourage importations in every reasonable way, even to giving premiums for cattle imported and sold in Canada.

What is wanted is to prevent importation of cattle for speculative purposes, which are known or suspected beforehand to be diseased, as well as importations of diseased animals by careless importers or their agents.

In conclusion I beg to submit the following recommendations:—

I. That the Conference believes in the reliability of tuberculin as a diagnostic agent; also, that it is capable of abuse and may be made the means of dishonest practices; we therefore recommend that its use be made illegal and punishable by fine and imprisonment by anyone not duly authorized to use it.

That its administration be restricted to qualified Veterinary Surgeons.

II. That all neat cattle imported into Canada from Europe shall be tested officially before being allowed to leave quarantine.

III. That the Government be urged to encourage importations of pure-bred stock for breeding purposes in every reasonable way, even to the giving of premiums for such stock imported and sold to remain in Canada.

Gentlemen, this fight against tuberculosis will be a hard one, but it is a worthy one; and we may rest assured that where the health and lives of our families and the vast commercial interests at stake are in the one side of the balance, and want of knowledge and selfish interests in the other, the final outcome cannot be doubtful.

#### **Resolution No. IV.**

Whereas, this Conference in the foregoing resolutions has given expression to opinions as to the need for concerted action on the part of the Governments and the people of Canada for arresting the ravages of tuberculosis; and whereas, in order to carry out such action, organization is essential:—

Resolved, that it is the voice of this Conference that a "Dominion Association for the Prevention of Tuberculosis" should be established, and to that end this Conference does approve of the action taken by the members of the Canadian Medical Association and others, at a meeting held in Ottawa, in September, 1900, in forming an Association with provisional officers; and does hereby agree to lend its hearty support to that Association and its objects as then formulated.

## SYMPTOMS OF RENAL TUBERCULOSIS.\*

BY

H. M. KINGHORN, B.A., M.D., Saranac Lake.

My interest in tuberculosis of the kidney was aroused some years ago when, as house physician to the Montreal General Hospital, I had a case under observation. It was one of considerable interest. The patient, A. J. M., male, aged 35 years, a photographer, was admitted to the hospital in July, 1895, complaining of "passing blood in the urine." The trouble began three months previous to admission. The passage of blood was first noticed in the evening, when the urine was seen to be dark coloured and cloudy. He consulted a physician and took medicine for three weeks, and during that time the dark colour disappeared. It then again became cloudy, so he took to bed and remained there five days. When he moved about or exercised the cloudiness got worse, but when he kept quiet it would disappear. From the time of appearance of his trouble until the date of his entrance to the hospital he had not at any time had pain while urinating; the feet had never been swollen; he had not had headaches; he had always had a good appetite; and the amount of urine had been good. Though careful enquiry was made, no point of importance was obtained that could account for the disease.

Up to the age of 21 he had worked on a farm as he had not enjoyed good health, having been troubled with hæmorrhoids. For the last twelve years he had been a photographer. When a child he had measles, whooping-cough, and chicken pox. At 25 years of age he had "remitting fever," which lasted four weeks and which was accompanied by chills, high fever and sweats. The nature of this he could not state, but he was sure it was not malaria. At 28 years of age he had grip. There was no venereal history and his habits were good. Though four of his family died in infancy there was no tuberculous history so far as he could state.

On admission to the hospital, his appearance was that of a tall, well-nourished man of 35 years, whose chief complaint was that of occasional passing of blood in the urine. He also stated that he had a sore feeling in both sides of the back across the lumbar region while lying on his back. This soreness had been present for a long time and had got worse after blood first appeared in the urine. The lymphatic glands were not enlarged. Examination of the cardio-vascular system gave

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\* Read before the Saranac Lake Medical Society.



evidence of a normal heart without any enlargement and a pulse of 70, regular, good volume, no increase of tension but a slightly thickened artery.

The respiratory and digestive systems were normal.

On July 5th, the day of admission, the urine was as follows:—Twenty ounces for 12 hours (the quantities for the following days being 39, 38 and 51 ounces for 24 hours), cloudy, alkaline reaction immediately after being passed, specific gravity 1020, no sugar, and (after filtering) no albumin, normal in colour. A specimen he had kept from the previous day was smoky and contained blood cells in large numbers, a few pus cells, no casts, and very few pavement epithelial cells.

On July 8th, I had him pass water in my presence, and for several days watched every act of urination. There was no frequency of micturition and no pain either before or after urinating. The stream was large, came away at once, was uninterrupted, was not darker at the beginning or end of micturition, but seemed to be uniformly coloured during the passage. Two small clots of blood were passed. He said that after coitus there was no increase in the amount of blood, and that this act seemed to have no influence on the passage of blood. He had no symptoms of stricture, and this, together with the facts mentioned above, made me conclude that the lesion was not in the urethra.

From the fact that the blood was uniformly mixed with the urine and was not increased in amount at the end of the act of micturition, and that there were no strong symptoms of bladder disease (inasmuch as there were very few epithelial cells), I concluded that trouble was situated either in the ureters or in the kidneys.

Repeated examination of the urine showed either a trace of albumin or none whatever, and the absence of casts and usually an acid reaction. I therefore excluded the kidney structure proper, and concluded that the hæmorrhage was probably from the pelves of the kidneys. The sore feeling over the lower part of the back, which he had complained of since the onset of his trouble, and the tenderness which was elicited over the region of the kidneys, pointed to these organs as the seat of the trouble. The probable cause of the hæmorrhage was thus limited to a renal calculus or a tuberculous pyelitis.

To get a good specimen for examination. I washed the glans penis with a solution of carbolic acid, and drew off the urine with a clean catheter, and in the sediment found large numbers of tubercle bacilli. I may say that I did not observe any tuberculous deposits in the testicles, vesiculæ seminales or prostate.

Renal tuberculous can be latent, and in many cases the most marked and advanced disease of the kidney, and even of the pelvis and ureter,

may exist for a long time with total absence of symptoms pointing to a lesion in the urinary tract; and the disease may destroy one kidney and block its ureter without being recognized. In such cases, the only indications of ill health may be anæmia and loss of weight, and only late in the history of the case may the attention of the physician be directed to the tuberculous disease. No renal affection gives more varied symptoms; no one is more fertile in errors in diagnosis.

The disease sometimes presents itself as follows:—A young man has been troubled for some time with a frequent desire to urinate; the urine is clear but very abundant; he then has soreness over the kidney; the urine is cloudy and sometimes contains small clots of blood; sometimes abundant hæmaturia appears. Later on, the patient becomes pale, loses his appetite, loses weight, and has a slight evening elevation of temperature. The lower extremities become œdematous. On examining the kidney region, we find that the kidney is increased in size and a little tender. The symptoms increase slowly. Death may occur by pulmonary tuberculosis or by uræmia.

**General Symptoms.**—General symptoms are often lacking at the onset of the trouble. Later on, they are characterized by a loss of well being, to which no definite cause can be assigned; and when one questions the patient, one finds that there is loss of appetite, some loss in weight, perhaps some night sweats, and, above all, an elevation of temperature, which may be either remittent or intermittent, and having an evening exacerbation. Tuffier, however, lays stress upon the fact that renal tuberculosis may be latent, and may reveal itself only by the general symptoms of loss of well-being and of cachexia. Frequently there may then appear profuse diarrhœa which is difficult to check, and signs of a generalized tuberculosis may ensue. As a rule, the development of the disease comes on insidiously, and general symptoms will not permit one to make sure of the diagnosis.

An evening elevation of temperature which persists for a considerable time is not rare during the course of renal tuberculosis. When there does not exist an increase in the volume of the kidney which can be made out by abdominal palpation or lumbar percussion, it is very probable that the fever is due to generalized tuberculosis.

A careful examination of the urine is of the utmost importance, and the patient's urinary history should be inquired into. Israel asserts that the urine of primary renal tuberculosis without bladder disease, has nothing pathognomonic except the presence of tubercle bacilli, and that these are found but seldom in those cases free from disease of the bladder. Polyuria has already been mentioned as a frequent and early symptom and will be mentioned more fully later. In the early stage of

the disease, the urine is clear but often albuminous, and these symptoms, viz., clearness, increase in quantity, and presence of albumin, and sometimes the presence of tubercle bacilli, characterize it in the early stages. Casts are rare; the presence of red blood cells is of great importance. Leucocytes are always present.

**Polyuria.**—Polyuria is one of the first indications of a tuberculous lesion in the kidney and is probably due to hyperæmia produced by tubercle bacilli in the organs. It is not apt to be noted unless when associated with albuminuria, but when we are aware of its presence, we should consider it as a symptom of considerable value, especially when it occurs early. Sometimes there occurs a marked increase in the amount of urine which coincides with an increase of pain in the bladder. A Robin has called this a “prætuberculous polyuria.”

**Frequency of Micturition.**—Probably the symptom which makes the patient consult a physician more frequently than any other is “frequency of micturition.” It is a prominent symptom from the earliest to the final stages. It may be present to a marked degree without the bladder being diseased. It is often falsely considered as due to bladder disease, in spite of the fact that the urine is perfectly clear. It is important to remember that it is usually equally marked at night, and this fact should increase the suspicion that it is due to tuberculous disease. Tuffier says that it is a constant symptom of renal tuberculosis, and that in doubtful cases it permits one to differentiate this affection from a neoplasm of the kidney, or from a simple pyelonephritis. I shall speak later of the occurrence of pain with this symptom.

**Pyuria.**—Among the earliest symptoms to direct the physician’s attention to the disease are “the brisk emission of a considerable quantity of pus,” what the French call *romique rénale*: or else an abundant hæmorrhage, which is spontaneous and repeated; less often the appearance of a tumour. In all cases of pyuria with renal symptoms in men, a careful examination should be made of the genital organs and prostate for tuberculous disease. If the symptoms are associated with rapid loss of weight, anæmia, and an elevated evening temperature, one should regard tuberculous disease as a probable cause.

When the disease is well established pus in the urine is almost constant, and when it has advanced to such a degree that the kidney has become a “surgical kidney,” the urine has the following characteristics: It is uniformly cloudy and remains so after being passed. It is usually acid. When left standing in a specimen glass, its appearance is very suggestive,—the bottom layer consists of a greenish, pea-soup-like substance, through which are blood stained striae. The rest of the urine is not clear but is more or less opaque. According to Guyon, the pyuria



presents three great characteristics. It is spontaneous, constant, and lasting. In some cases it is intermittent. When a patient has reached this condition he is in a satisfactory state only when the urine contains pus. When the urine becomes clear, signs of retention of the products in the renal pouch ensue; he has violent lumbar pains, loss of appetite, malaise and elevated temperature.

**Hæmaturia.**—The initial hæmaturia is of great diagnostic significance and is frequently one of the first symptoms of renal tuberculosis, and is due to the renal congestion. Of sixteen cases of primary tuberculosis of the kidney, Israel had four cases in which hæmaturia was the first symptom. As a rule, it is small in amount and consists mostly of small clots, which are deposited at the bottom of the vessel. Later on there are mucopurulent clots streaked with blood. Very exceptionally, bloody urinations occur and produce large clots. Blood is intimately mixed with the urine. This hæmaturia resembles that which occurs with neoplasms of the bladder; it is spontaneous, appears and disappears without cause, and cannot be distinguished from hæmaturia caused by tuberculosis of the bladder. Its duration is usually short. Sometimes it will last for five or six days, and in one exceptional case reported by Israel, it lasted for four weeks.

As a symptom, hæmaturia may long antedate the development of a gross renal lesion. We frequently meet with cases of profuse and frequent hæmoptyses long before physical signs of pulmonary phthisis develop. So in renal tuberculosis, hæmaturia may be present as a premonitory symptom of the disease. While we regard hæmoptysis as a valuable and often a most fortunate danger signal of pulmonary phthisis, even when unaccompanied by physical signs, hæmaturia has not been so regarded, although in some instances it carried with it the same warning. In both pulmonary and renal tuberculosis the hæmorrhages are probably analagous in the early stages, and due to the congested condition of the organs.

When there is a mixed infection the urine becomes cloudy and is almost uniformly cloudy when passed. The presence or absence of albumin probably depends upon whether or not the tuberculous lesion communicates with the urinary tract. If the disease is situated in the kidney substance, the inflammatory products are shut off and do not mix with the excretion, and the kidney substance, not implicated in the disease, continues to excrete healthy urine. But if there is a communication between the diseased area and the urinary tract, the serum, blood corpuscles, and leucocytes escape and give the urine an albuminous reaction.

**Bacilli.**—The criterion of the nature of the disease is the presence of



the tubercle bacillus in the urine, but the bacillus is not constant and may be absent in the first stages of the disease. Tuffier has not been able to detect the bacillus more easily when there is blood in the urine, contrary to that which occurs in hæmoptysis—a condition always favourable to detect it. One should examine the sediment of purulent urine to find them.

In *La Semaine Médicale*, March 30, 1896, page 150, there is an interesting discussion on the importance of the differential diagnosis between the tubercle bacillus and the smegma bacillus, in affections of the urinary passages. Von Leyden had three cases where he was unable to expose this error, and in one of these cases Koch himself could not give a positive opinion. I have at present under observation a woman with chronic Bright's, whose urine contains bacilli which are morphologically identical to tubercle bacilli. Though they keep the fuchsin stain when decolourized with Gabbot's blue, they lose the fuchsin stain to acid alcohol. To make sure that they were smegma and not tubercle bacilli, I injected the sediment into a guinea pig. About five weeks later I killed the pig, but found it free from tuberculosis. Trudeau and Senator assert that in affections of the urinary passages the inoculation into a guinea pig, alone admits of a positive diagnosis. An excellent control method, which E. R. Baldwin suggests, is to take some tubercle bacilli from a culture, to stain these on one slide and the sediment which contains the suspected bacilli on another, then to use the acid alcohol on both. The tubercle bacilli do not lose the stain while the others, if smegma bacilli, do lose it. The difficulties of detecting the bacilli make the inoculation method the one of choice to diagnose the renal tuberculosis.

Counterstaining by acid alcohol is considered by many to decolourize smegma bacilli and not to decolourize tubercle bacilli. The method we employ in Dr. Trudeau's laboratory is as follows:—The urinary sediment is stained in the ordinary way with carbol-fuchsin, washed, and dried: then treated with 25 per cent. nitric acid until decolourized; then washed and dried; then treated for two minutes with 95 per cent. alcohol, and where there still exists a doubt, the presence of the bacilli is then further corroborated by injecting the sediment into a guinea pig. When large quantities of mucus are present, it is advisable to render the urine slightly alkaline before centrifugating it.

**Tumour.**—Tumour in the situation of the kidney is not an early symptom but occurs in the later stages. The physician's examination should include the whole genito-urinary tract and should include the ureters. If the kidney is only slightly increased in volume and is not displaced, bimanual palpation will not reveal it. When it is considerably increased

in volume, palpation reveals an enlarged kidney without any special characteristics to permit one to consider it as tuberculous. In these doubtful cases, one should add to the examination ureteral catheterization. This gives information, not only about the permeability of the ureter, but permits of judging whether there is disease in both kidneys. It allows one to collect the urine from each kidney separately, and to inoculate the product of each of them into a guinea pig. Renal swelling, sufficiently large to be made out by palpation, may be produced by extensive disease of the cortex alone, and, when this is so, the swelling is found to be uniform in size, when examined from time to time. If, however, the renal swelling is due to obstruction of the urinary tract, giving rise to hydronephrosis or pyonephrosis, from time to time great variations in the size of the kidney may be observed.

**Pain.**—Pain in tuberculosis of the kidney depends upon whether the pelvis and ureters are involved. When the kidney parenchyma alone is involved, the patient seldom complains of severe pain, but usually experiences only a dull, dragging sensation in the loin. It is often a distressing symptom in cases of ascending tuberculous disease or in advanced cases of primary renal tuberculosis where the pelvis, ureters and bladder are also affected. In character it is usually a slight ache, or slight dulness, or heaviness in the lumbar region. It is unilateral, or predominates on one side. It is extremely variable and capricious in its characteristics. As a rule, movement does not influence it, but in some cases the acts of walking or moving quickly will produce pain severe enough to simulate stone in the kidney. The dorsal position in bed quiets it. It is sometimes aggravated after meals, or after a blow, or by cold, but chiefly before the monthly periods. It may radiate towards the bladder, groin, and thigh of the affected side, the rectum, or the opposite kidney. Guyon has described painful symptoms occurring in the healthy kidney and rectum, that he calls reno-renal and recto-renal reflexes. The healthy kidney, without any pathological change, is the seat of sharp pains similar to those felt in the diseased organ. The removal of the diseased kidney causes the reflex pain to disappear in the healthy organ. When pain accompanies frequency of micturition, it begins to be severe about the middle of the flow, increases towards the end, and then subsides almost immediately the bladder is emptied. Pain and frequency are as marked during the night as during the day, and blood, when present, is uniformly mixed with the urine. Irritation of the bladder, as evidenced by frequent and painful micturition, is a frequent and very characteristic symptom of tuberculous disease of the kidney, and may be present without the bladder being diseased. This irritation of the bladder is frequently the first

symptom which attracts the patient's attention and makes him consult a physician. Painful micturition is usually most marked in the ascending lesions, but is met with from the earliest to the latest stages. It may disappear, or become much abated for a considerable time. Sometimes the pain in the kidney, though permanent, may assume an intermittent form, as evidenced by acute exacerbations. When these exacerbations occur, the patient may have symptoms of renal retention. That is to say, the acute pain will coincide with an increase in the volume of the kidney and the passage of clear urine; then the urine is changed again and becomes cloudy and abundant; and at the same time the pain disappears, and the kidney returns to its normal condition. This painful condition may, finally, be followed by crises having all the characteristics, the intensity, and the termination, of renal colic produced by stone. Renal colic of this nature is probably produced by the kidney throwing into the ureter purulent lumps or phosphatic concretions. Pain of this variety has been met with, however, when there was no obliteration of the ureteral canal, as was proved by subsequent operation, and is probably due to renal congestion. When due to this cause, exacerbations of the most intense pain will occur chiefly with menstruation, without there being any renal distention.

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## NEURITIS FROM GUN-SHOT INJURY.\*

BY

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Since the introduction of small-bore high-velocity bullets in warfare a few instances of paralysis of nerves without actual division of the cords have been recorded.

In an interesting note in the *British Medical Journal* for Feb. 17th, 1900, p. 406, Clinton T. Dent records an instance of paralysis of the musculo-spiral nerve in which the symptoms seemed to point to division of the nerve cord. Operation was deferred and in the course of a week there was a material improvement. In another case the ulnar nerve was actually cut down on and exposed and found intact although the symptoms had led to the belief that it was divided.

Mr. Dent points out that ecchymosis may occur at some distance from the track of a bullet, and also that distant structures such as fascia may be violently stretched by such injuries. In either of these methods it is readily conceivable that a nerve trunk might be damaged without being actually pierced or divided.

The following case is an example of complete paralysis of the extensors and paresis of the flexors of the forearm resulting from a bullet wound of the arm, and in which the electrical reactions and subsequent recovery of motor power indicate that the nerves though damaged were not divided.

J. H., æt. 25, was admitted to the Montreal General Hospital on Dec. 14th, 1900, for paralysis of the left forearm. As the nerve was believed to be divided he was placed in a surgical ward.

On Feb. 27th, 1900, at the battle of Paardeberg, he was struck in the left arm by a Mauser bullet at a range of 400 yards. The bullet entered the outer side of the arm about the middle of the humerus, passed in front of the bone and escaping a little higher up the arm grazed the chest wall, the patient at the time of the injury lying down in the firing posture. The immediate sensation was as if he had received a heavy blow. His arm was jerked up convulsively above his head and then fell helpless by his side. After the injury there was immediate wrist drop, the fingers were tightly clenched in the palm, and on reaching the base hospital three days later the hand was forcibly opened, the fingers extended and the limb placed on a splint. Rapid wasting

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\* Read before the Montreal Medico-Chirurgical Society, Jan. 11, 1901.



of the muscles of the forearm set in and particularly of the thenar eminence, and since the injury the loss of power has continued. There has been some loss of sensation in the fingers but none of the severe pain which so frequently accompanies gunshot injuries of nerves.

*Status Præsens.*—The patient is a healthy looking young man. Two small round scars, one cm. in diameter, both rather tender, on the inner and outer side of the arm, indicate the track of the bullet.

There is complete wrist drop and absolute paralysis of the extensor muscles on the back of the forearm, but the power of the triceps is retained and there is slight movement in the supinator longus. The fingers are extended and in a line with the hand whilst the thumb is adducted and lies between the first and second fingers.

The flexors are weak but there is some slight power of movement in the palmaris longus, the flexor carpi radialis and carpi ulnaris. The muscles of the forearm are firm and measure 24 cm. on the left and 27 cm. on the right side. The outer muscles of the thenar eminence are flattened and markedly atrophied. The skin of the fingers is thin and the finger nails clubbed. There is loss of tactile sense over the whole of the index finger, over the peripheral joints of the second and third fingers, and over a small patch on the ball of the thumb.

Electrical reactions. The extensors show a slightly diminished irritability to both the faradic and galvanic currents. The flexors of the wrist react to both currents quite as well as on the healthy side.

The small atrophied muscles of the thenar eminence do not respond to a strong faradic current, and with galvanism they show the slow muscle contraction characteristic of nerve degeneration, K.C.C. being greater than A.C.C. Rapid improvement set in after the use of electricity, and in a few days there was some movement of the extensors. On leaving the hospital on Jan. 14th, the patient could extend the hand beyond the straight line with the forearm.

The diagnosis was neuritis of the musculo-spiral and median nerves.

At first sight the supposition was that the musculo-spiral nerve had been divided by the bullet. The history of immediate wrist drop suggested such an injury, and absolute paralysis of the extensors ten months after the injury is also in favour of such a view. The value of electricity as a diagnostic agent is well illustrated, the retention of nerve irritability below the supposed site of division of the nerve at once proving that it was intact.

The prognosis, judging from the prompt response of the affected muscles to both currents, is favourable, and complete recovery of the flexors and extensors may be anticipated. The small muscles of the thumb, however, showing the reaction of degeneration ten months after

the injury, will probably be permanently paralysed. The initial wrist drop was undoubtedly due to irritation of the median, as shown in the clenched hand. It seems remarkable that the muscles of the thenar eminence supplied by the median should suffer so much more severely than the other muscles supplied by this nerve.

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### ACUTE APPENDICITIS COMPLICATING HERNIA IN A VERY YOUNG INFANT.\*

BY

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J. A. M., a twin male, aged seven weeks, was brought to the Montreal General Hospital on September 29, 1900, with a right-sided scrotal hernia. The following history was obtained. On September 27th, he began to vomit, and although he was nursing from the breast, he could retain nothing on his stomach. This vomiting, with absolute constipation, continued until his admission to the hospital on the third day. On the morning of his admission, the mother noticed for the first time that the scrotum was much swollen and inflamed, and called in a physician, who diagnosed a strangulated hernia and made several ineffectual attempts to reduce it. He then advised that the child be taken to the hospital for treatment.

Examination showed the right side of the scrotum much swollen and cedematous, and containing a sausage-shaped mass extending up to the external abdominal ring. The child had a temperature of 102° F., a weak, rapid pulse, was very much distressed, and vomited constantly. The abdomen was very tense.

Under chloroform anaesthesia, we attempted to reduce the hernial mass but failed completely, fortunately for the child, as the sequel will show. After giving an unfavourable prognosis, permission was given to operate, and an incision was at once made through the scrotal tissues down on the incarcerated bowel. Much to my surprise, on opening the tunica vaginalis, free pus was found, and my first thought was that the bowel had become gangrenous and was perforated. On prolonging the incision up to, but not through, the external abdominal ring, we saw that the strangulated bowel consisted of the cæcum and vermiform appendix, and that the latter had become gangrenous and had perforated, presenting exactly the picture we are so familiar with in the abdomen. The appendix was ligated off in the usual way and the strangulated cæcum and the surrounding tunica vaginalis were then

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\* Read before the Montreal Medico-Chirurgical Society, February 9, 1901.

disinfected by swabbing with pure carbolic acid neutralized in a few minutes or so with absolute alcohol. I next directed my attention to the point of strangulation—the external abdominal ring—and carefully slit up the diverging fibres of the external oblique muscle, until I had sufficiently enlarged the ring to permit of pulling down the bowel through the opening. Having thus satisfied myself that the bowel above the ring was not gangrenous, and that the circulation in the part previously strangled was being well restored, I returned the whole of the strangulated mass, including, of course, the stumps of the appendix, into the abdominal cavity, repaired the ring, and closed the funicular process with buried catgut sutures. The skin incision was then closed by a continuous silk suture, except a small opening at the upper part, through which I inserted a narrow gauze drain. The suture line was then covered by iodoform pigment, and a layer of sterilized absorbent cotton held in place by a spica bandage completed the dressings.

As the mother was nursing both children, it was necessary that she should take the child home, which she at once did—the child having been but two hours in the hospital. She was told to give it half a teaspoonful of castor oil with four drops of paregoric that night, and to return with it next day. Next morning, she reported that the bowels had moved well during the night and the child had nursed and slept well. It looked well and did not complain. The stitches were removed on the sixth day, and the child (though brought back for dressings rather irregularly, owing to the illness of his mate) practically made an uninterrupted recovery. To-day, as you can see, there is absolutely no sign of hernia, as the union of the deep parts is firm, and the general health is very good.

Points of interest in the case are :—

(1) Age of the child, seven weeks. I can find no record of an appendectomy having been done on such a young infant. Needless to say, the diagnosis of acute appendicitis was not made before operation in this case.

(2) Did the hernia exist unnoticed previous to the present attack; and did the strangulation cause the gangrene of the appendix? Or did acute gangrenous appendicitis occur in a prolapsed appendix (hernia of), and thus cause the strangulation? I incline to the latter hypothesis.

(3) The good result was undoubtedly due to the fact that the strangulation at the ring walled off the abscess from the peritoneal cavity, thus enabling us to treat the appendix as an extra-peritoneal structure. We were also fortunate in being able to thoroughly cleanse the parts before doing the herniotomy proper, and returning them into the

abdomen. It was a case where the end justified the means, and where the peculiar circumstances of the case justified the course followed.

[For the clinical notes of this case I am indebted to my House-Surgeon, Dr. L. M. Murray.]

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## MEDULLARY NARCOSIS.

BY

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There has been a great deal of literature in circulation lately upon the subject of medullary narcosis, the question of its usefulness having been discussed in many lengthy papers and most practitioners at the present time regarding it with severe criticism. It is not my intention to put forward any arguments either for or against medullary narcosis, but simply to report one of my cases in which this mode of producing analgesia has been employed.

*Case.*—B. K., aged 39 years, female, German, in good general condition, but suffering from pain referred to the pelvis. On examination, ovaries and tubes were found to be in a healthy condition but the cervix was eroded and congested. Amputation of the cervix, owing to the extent of the involvement, was indicated.

The patient was taken to the operating room and placed upon the table at 2.40 p.m., and the hips and shoulders were raised by means of pillows. The patient lying upon her side, was then directed to arch her back as in a stooping position. I think that in this position one can gain most easy access to the spinal canal. The needle is introduced within a finger's breadth of the spine of the vertebra on the lower side that is the side of the convexity.

At 3.44 p.m., I injected fifteen minims of two per cent. solution of cocaine. The cocaine used had been previously boiled for two minutes for sterilization. In four minutes there was a slight numbness felt in the legs and abdomen, and two minutes later (six minutes after the injection) there was complete analgesia in legs and abdomen.

The patient was then placed in the lithotomy position and, having already been prepared for operation, the uterus was curetted; and then I amputated the cervix by Emmet's operation. There was absolutely no pain whatever during the operation, though the patient could "feel something," as she expressed it. That there was even no discomfort to the patient was well shown in the fact that she fell fast asleep on the table; nor did she waken until she was placed upon the carriage to be taken to the ward. She then felt slightly nauseated. Complete anal-



gesia of these parts lasted for one hour and thirty-five minutes, that is, until 4.20 p.m., when the prick of a needle gave pain at first in the upper abdominal quadrant, then in the feet and legs, and finally throughout. At 4.35 p.m., all traces of analgesia had disappeared.

At 1 a.m. the following day the temperature rose to  $101^{\circ}$  F., respiration, 22; pulse, 92; but at 5 p.m. had dropped to  $100.4^{\circ}$ , respiration 26, pulse 88. Since that time, temperature, pulse, and respiration have been running along with but slight deviation from the normal.

After the operation she complained of headache, nausea, and vomiting. The nausea and vomiting continued for eight hours after the operation. The headache lasted for three days, and was most severe during the first and second day, though the pain was considerably lessened by sodium bromide used in twenty grain doses.

Patient has progressed favourably, and to-day, fifteen days after the operation, she was discharged, having had all her previous symptoms relieved and without any ill effects whatever from the lumbar puncture performed.

# RETROSPECT OF CURRENT LITERATURE.

## Medicine.

UNDER THE CHARGE OF JAMES STEWART.

### Rheumatic Fever.

ARTHUR NEWSHOLME, M.D., F.R.C.P., LOND. "The Epidemiology of Rheumatic Fever."

F. J. POYNTON, M.D., F.R.C.P., LOND. "The Pathology of Rheumatism."

ST. CLAIR THOMSON, M.D., F.R.C.P., LOND. "Rheumatic Fever in Relation to the Throat."

G. A. GIBSON, M.D. "The Effects of Rheumatic Fever on the Heart."

GEORGE F. STILL, M.A., M.D. "Rheumatism in Childhood."

ARTHUR P. LUFF, M.D. "The Treatment of Rheumatic Fever." *The Practitioner*, London, January, 1901.

The January number of the London *Practitioner* is termed the Rheumatic Fever Number and contains important articles by the above named writers, who present the most recent views upon the various points discussed.

It appears that Norway is the only country in which medical practitioners are required to report periodically the number of cases of rheumatic fever and certain other diseases, and from the study of statistics thereby offered, one finds grounds from "the great excesses of prevalence" in certain years of rheumatic fever, for the application of the name *epidemic*, which, according to the duration, may be classified as "explosive," or "protracted," the former terminating in less than three years, the latter lasting longer. From this, in part, the author argues that rheumatic fever is of infective character.

*The Influence of Climatic Conditions.*—Under this division of his subject, the author wishes to refute the prevailing teaching concerning the relation of dampness of air and soil to excessive rheumatism. A heavy annual rainfall is associated with a low amount of rheumatic fever, and a small rainfall with an excessive amount of rheumatic fever, and two or three such years are more potent than one.

*The Influence of Soil Conditions.*—A dry soil with low ground water favours rheumatic fever. The level of the ground water serves rather as an index of other conditions,—as heat and cold, relative dryness and wetness,—favourable to the development of rheumatic fever.

The author says, in closing his paper, that it seems most reasonable to regard rheumatic fever as essentially a soil disease due to a saprophytic soil organism, which is “drowned out” in wet weather, multiplies rapidly in dry years, and is transferred to the human recipient by unknown means.

He suggests dust convection and, in the light of the recently acquired knowledge concerning malaria, he says it is not perhaps too far fetched to surmise that inoculation by the contagion may be caused by domestic vermin or by the common house fly.

*Pathology.*—Dr. Poynton says rheumatic fever, to be studied truly, must be studied as a disease of childhood. Endocarditis, pericarditis, and nodule formation, are lesions bearing striking resemblances. Each of them shows a destructive and a reparative process. Endocarditis and pericarditis show cell degeneration and necrosis, nodule formation is represented by the fibrino-cellular exudates and, later, by fibrosis. Suppuration is not found in either.

The various theories of the pathology of rheumatism are reviewed.

Cullen's view (1784). The articular processes in acute rheumatism were attributed to the direct influence of cold, by which the joints, owing to their covering, became inflamed, and there followed a general fever.

J. K. Mitchell (1831) suggested that rheumatic fever was the result of certain lesions located in the spinal cord. Chill or exposure were cutaneous sensory fibre-irritants, which created a central disturbance in the spinal cord or medulla and, reflexly, the organs and tissues involved in rheumatism were affected.

The *toxæmic theory* implies that the cause of rheumatic fever is some poison circulating in the blood—whether the result of a perverted metabolism directly (the chemical theory), or of a perverted metabolism upon the nervous system, and reflexly upon the joints and tissues involved (the neuro-chemical theory), or a toxæmia, the result of an infection from without—by some organism (the infectious theory).

The chemical theory supported from the lactic acid point of view, by many good men, such as Fuller, Senator, Sir B. W. Richardson and Sir Walter Foster, and from the uric acid standpoint, by Latham and Haig, yet remains unproven. For, on the one hand, lactic acid has not been conclusively demonstrated in excess in the tissues and excretions, nor are chemical pathologists agreed upon the fact that uric acid is in excess in the blood tissue or sweat secretion of rheumatic fever.

The infectious theory has gained ground during the past ten years. Mantle, in 1887, advanced the view with fear and trembling. His views were strongly supported by many eminent men of the British Medical Association. Klebs, in 1875, demonstrated a micro-organism in the cardiac valves of a patient dead from rheumatic fever, which he claimed differed from that observed in malignant endocarditis. In 1887, the investigations of Popoff, and his experiments upon rabbits, showed the possibility of inducing pericarditis, endocarditis and arthritis by the injection of cultures from the blood of a rheumatic fever patient. The clinical evidence in favour of the infectious theory is very strong, and one cannot do better than Poynton has done when he quotes the words of Cheadle, written in 1895,—“The occasional epidemic prevalence, the variability of type, the incidence upon the young, the occurrence of tonsillitis, of endocarditis, of pleurisy, of pneumonia, of erythematous eruptions, the rapid anæmia, the tendency to capillary hæmorrhages and albuminuria, the implication of the joints, the relapses, the occasional supervention of hyperpyrexia, the nervous disturbances, the specific power of salicylic acid, are all suggestive of an infectious disease.” Under four headings Dr. Poynton groups the views on the nature of the infection in rheumatic fever.

- (1) That there is no specific micro-organism, but the disease is a form of septicæmia of a staphylococcal or streptococcal origin.
- (2) That the infection is a mixed one.
- (3) That the micro-organism is a specific bacillus.
- (4) That the micro-organism is a specific diplococcus.

The great objection to the view set forth under the first heading, is the clinical history of rheumatic fever. The writer claims that, though virulent enough to kill, the virulence is not associated with suppuration; and this point is of such importance in the present state of our knowledge, as to establish rheumatic fever as a specific disease. The view of the mixed infection rests upon the fact that cocci have been demonstrated in rheumatic fever, and yet have not proved specific. That the micro-organism is a specific anaërobic bacillus has been claimed by Acholm, Thiroloix and Ballencourt. The evidence in favour of the fourth view, that the micro-organism is a specific micrococcus, finds forcible support from Dana, Triboulet and Apert, Westphal, Wasserman, Malkoff, Paine and Poynton. These two last named have isolated in twelve successive cases of rheumatic fever a diplococcus which produced on intravenous inoculation into rabbits the clinical appearances of rheumatic fever. These micro-organisms have been isolated from the blood, urine and tonsils of patients suffering from rheumatic fever, and also from the pericardial exudate and cardiac ulcers, after death. They



have produced, on intravenous inoculation in rabbits, polyarthrititis, valvulitis, pericarditis, pleurisy, pneumonia, chorea, and nodules. The lesions were non-suppurative. They also produced coagulation necrosis in the kidneys and liver. He describes in further detail the characteristics of this micro-organism, and remarks, at the end, that the most important fact deduced from this investigation is that *this diplococcus which we have isolated is a cause of rheumatic fever.*

Dr. Poynton would explain many of the clinical features by his knowledge of the life history of this organism. The tonsillitis, the tonsilar site of infection,—for this diplococcus has there been found. They are rapidly destroyed by the human tissues,—hence the fleeting character of the polyarthrititis. The connective tissues suffer greatly in rheumatic fever,—here the diplococci are most readily found. Pericarditis, the most dreaded complication of rheumatic fever, affords in its exudation the most virulent cultures of the organism. An ingenious theory in explanation of relapses, is offered. In healing lesions, and in cultures on a suitable medium, a solitary coccil form, persistent and larger than the individual element of the diplococcus, has been found. The writer suggests that this may persist in the living tissues for some considerable time, and recover its virulence if the tissue vitality becomes lowered by any untoward influences.

Since 1762, when John Ball made an allusion to the rheumatic origin of angina, has the attention of the profession been directed to the relationship between tonsillitis and other affections of the throat and rheumatism. This may be twofold, or one or other of two possible relations,—the tonsil considered as the point of entry of the rheumatic germ, or as a tissue frequently involved in those with a rheumatic diathesis. There seems to be an increasingly strong support given to the view that the tonsil is the site of entrance of the rheumatic infection. Abraham, Buss, Poynton and Payne, maintain this view.

An adverse criticism, however, is found of this view in a *thèse de Paris* by Emile Poingt, who claims that the articular complications, which so frequently follow tonsillitis, should not be confounded with essential acute rheumatism. The tendency to suppuration of the joints involved, and the uselessness of salicylates, favour this view. Then the view that tonsillitis and pharyngitis are rheumatic manifestations finds supporters in Haig Brown, A. E. Garrod, and W. B. Cheadle: while Y. B. Hope adversely criticizes this teaching. A decision is impossible.

The crico-arytenoid joint may be the site of a rheumatic affection, inducing a condition of ankylosis simulating a paralysis of the recurrent laryngeal nerve,

*Heart.*—While the relation of tonsillitis remains a debatable question,

the endocardial and pericardial involvements have long since ceased to be such. It is highly probable that all cases of acute and subacute cardiac diseases are of microbic origin, and all may therefore be termed infective; and the admirable work of Poynton and Payne goes a long way to prove the microbic origin of rheumatic heart affections, hitherto not so regarded.

With a view of understanding more clearly how the micro-organisms attack the heart, Dr. Gibson states that, so far as the pericardium and myocardium are concerned, no difficulty presents, since these are vascular. The endocardium of the venous valves is freely supplied with blood-vessels, while that of the valves of the great arterial orifices has none. Hence, an aortic valvulitis, for example, must arise from the blood passing over the surface of the valve. Bearing upon this subject, the important phagocytic functions of these cells, as pointed out by Washbourne, is to be remembered. Thus it is reasoned that, while exercising their protective functions in destroying bacteria, these cells suffer, and pericarditis or endocarditis results. It appears that in endocarditis the invasion is from the blood in the heart cavities. Retrogressive changes occur in the cells invaded by bacteria. Upon the affected surfaces, the fibrin corpuscles and platelets are deposited, and a vegetation results. The subendothelial layer is also involved, and the adjacent blood-vessels, etc., with leucocytic exudation.

Dr. Gibson would have us learn from this deposition of material upon the injured surface, Nature's lesson for rest, believing, as he does, that newly-formed material deposited upon the pericardial and endocardial surfaces, is protective. Rest is of highest importance. The drug treatment of rheumatism, while not conclusively in favour of the salicylate series, yet "there appears to be good ground for the belief that these drugs considerably diminish the cardiac effects of rheumatism." Absorbents are to be used when the pulse and temperature have become normal and the general symptoms have disappeared, and the writer prefers iodide of sodium in 10 to 15 grain doses, three times daily, for some weeks. The subsequent anæmia, if present, may be corrected by the use of iodide of iron, while digitalis or strophanthus should not be used. Counter irritation is recommended as an important measure in the treatment of endocarditis, as well as myocarditis and pericarditis. It is induced by the application of small fly blisters every night, or every second night, over the præcordia and their neighbourhood.

*Childhood.*—In reckoning the frequency of this disease in childhood, one must include those cases of chorea, in which there has been either a concurrent or previous articular rheumatism. Figures are given in support of this view. Rheumatism rarely occurs under two years of

age. The vagueness of the pains of rheumatism in childhood is dwelt upon—often referred to the muscles, sometimes to the neck, sometimes to the epigastrium, or to the axilla, or to the back of the knee. Dr. Barlow has drawn attention to the frequency of affection of the hip joint in rheumatism of childhood. It may be mono-articular for days. As regards the frequency of cardiac complications in childhood, upwards of 50 per cent. of 170 cases showed signs of permanent cardiac damage.

Dr. Still directs the reader's attention to the dilatation of the heart as a frequent result in rheumatism (Lee). Wasting in childhood is often attributable to rheumatic affection. Subcutaneous nodules are common, being found in about 28 per cent. of the severer cases. Their presence is often diagnostic, and prognostic as well, being of grave import, as they are often associated with severe endocarditis and pericarditis.

"Cerebral rheumatism" is exceedingly rare in children. Dr. Still reports one case, that of a patient, aged  $6\frac{1}{2}$  years, whose temperature went up to  $108.4^{\circ}$  F.

Of gastric catarrh, the "nervous" temperament, night terrors, somnambulism, habit spasm, lenteric diarrhoea and red hair, much remains to be learned; yet this author regards these as among the many indications leading to the detection of rheumatism in childhood.

*The Treatment of Rheumatic Fever.*—A review of the last half century of the treatment of rheumatic fever is followed by a discussion of the treatment with the salicylic compounds and the treatment with the alkalis. There are three views as to the mode of action of the salicylic compounds. (1) That they act as antiseptics and destroy the alleged micro-organism of the disease. (2) That they exert an antitoxic action. (3) That they act as nerve sedatives.

In the treatment with the salicylates, the author points out the necessity of a careful watchfulness upon the urine, and upon the heart's action. He admits that under this treatment, relapses in rheumatism may become more frequent, but if they do, it is probably explained by an improper use of the drug, cutting short its administration too early, and to the patient being allowed to get up and move about too soon.

It appears that the most untoward complications in rheumatism, as endocarditis and pericarditis, occur less frequently under the conjoint use of a salicylate with an alkali. Hence, Dr. Luff recommends "20 grains of sodium salicylate and 30 grains of potassium bicarbonate to be given every two hours until the pain is relieved, and the patient is under the influence of the salicylates." Then the quantity may be given every four until the temperature is normal. Then 15 grains of



the salicylate and 20 grains of the bicarbonate, are to be given every four hours until the joint symptoms have disappeared, and then three or four times a day until a fortnight has elapsed from the complete disappearance of the joint symptoms. It is better to use the sodium salt of the natural salicylic acid. In the event of the salicylates not being tolerated, salicin in equal quantity should be substituted for it. Sodium salicylate should not be given to children. In such cases, salicin and alkalis are to be used. The treatment of the joints consists of small blisters about the joints, or of iodine followed by poultices, or of the salicylate of methyl applied on lint and closely covered over and sealed down with gutta-percha tissue to insure absorption, which usually takes place in twelve hours, after which the dressing is removed. It is important to see to it that the salicylates are gradually left off, and that a return to solid diet is not made too soon. Relapses are accounted for by the failure to recognize these changes.

Six weeks at least is the period enjoined in all cases of rheumatic fever without cardiac involvement, and at least eight weeks, after the signs of cardiac involvement, in other cases.

In attempting to prevent cardiac involvement, the principal means at our disposal are salicyl compounds, complete prolonged rest, freedom from pain, a diet of fluids, mainly milk, free diuresis and daily bowel evacuations. One may use Caton's counter irritation method,—the employment of numerous small blisters applied between the clavicle and the nipple over the first, second, third and fourth intercostal spaces on either side. This measure may be supplemented by 8 or 10 grains of sodium or potassium iodide three or four times daily.

In cardiac failure due to myocarditis, which is probably more frequently a result of an acute rheumatism than is generally believed, digitalis often fails to exert its good effects. Strychnine and ammonium carbonate are of special value.

It is shown that hyperpyrexia is much less frequent since the use of salicylates than before. When it does occur, however, it requires the promptest and most energetic treatment, in the application of cold. The salicylates have no influence upon the hyperpyrexia, once it has been established.

As preventive measures in those subject to rheumatic attacks, a short occasional course of sodium salicylate, a diet largely vegetarian, careful attention to the general health, and an abundant supply of pure air in the dwelling house, are important.

*W. F. Hamilton.*



## Canadian Medical Literature.

UNDER THE CHARGE OF KENNETH CAMERON.

[The editors will be glad to receive any reprints, monographs, etc., by Canadian writers, on medical or allied subjects (including Canadian work published in other countries) for notice in this department of the JOURNAL. Such reprints should preferably be addressed to Dr. Kenneth Cameron, 903 Dorchester street, Montreal.]

### The Canadian Practitioner and Review.

October, 1900.

1. Some Experiences in the War in South Africa. G. Sterling Ryerson.
2. Erythema Bullosum, Graham Chambers.
3. Infant Feeding. Dr. McKee.
4. The Operative Treatment of Procidentia Uteri in Elderly Women. A. Laphorn Smith.

November, 1900.

5. Opening Address, Medical Faculty, University of Toronto. Bertram Spencer.
6. Two Cases of Fatal Lead Poisoning. Allen Baynes.
7. Specific vs. Symptomatic Treatment of Typhoid Fever, with Remarks on Feeding. L. Bentley.

December, 1900.

8. Primary Sarcoma of the Right Nasal Fossa, with Acute Frontal Sinusitis and Orbital Cellulitis. Perry G. Goldsmith.
9. Smallpox—Notes on Eighty-Nine Cases. W. F. Bryans.
10. Tubercular Disease of the Tubes, with Acute Peritoneal Infection. Herbert A. Bruce.

2. CHAMBERS defines erythema bullosum as that form of erythema multiforme which exhibits in the highest degree the pathological change which is present in the latter disease. He looks upon the hyperæmic spot, papule, tubercle, œdematous nodule, vesicle, and bulla as lesions representing different degrees of the same pathological process. All the forms of lesions are inflammatory in origin, but there is always present, in addition, more or less angio-neurotic œdema. In the great majority of cases the diagnosis can readily be made out. The multiformity of the lesions, and in particular the presence of one of the iris forms, as well as the distribution of the eruption, forms a picture difficult to mistake for any other disease. Four well marked cases are described.

6. Cases of lead poisoning in children are rare, the diagnosis not at all simple, and the treatment unsatisfactory. BAYNES relates the clinical histories of two fatal cases of children, aged two and five years, and describes a symptom hitherto unknown to him, viz., a very prominent dark blue circle about the anus, more marked from the fact that the children were of fair complexion, otherwise, there was nothing but a carefully taken clinical history and the fact that until the day of the first child's death, no previous history having been obtained, the case resembling so closely that of basilar meningitis, it was treated as such.

7. BENTLEY says that the death rate is too low in typhoid fever to be safe in making conclusive deductions on the evidence of one physician's practice. The fact that a practitioner has had no deaths or cases of hæmorrhage counts for nothing. With our present knowledge of typhoid fever it may be safely said that the profession is pretty thoroughly agreed that the treatment should be entirely symptomatic. There are but few diseases that present such a variety of conditions as typhoid fever, and this fact should of itself indicate a variety of methods of treatment, and that each case should be treated on its own merits. Mild cases, in which no complications are met with, do well with little or no medicine. When medicine is given, it should be given only for a definite purpose, and such remedies prescribed as are known to give definite results.

8. GOLDSMITH gives the history of a case of primary sarcoma of the right nasal fossa, and which presented several instructive features. There was entire absence of any nasal symptoms though the appearance of the man suggested mouth breathing. There was absence of pain, except referred to the frontal region, also absence of discharge and of odour. The apparently gradual distension to the frontal sinus, and the acute exacerbation of the trouble followed the preliminary twisting of five polypi. The predominance of the ocular symptoms, prominence of the eye, diplopia, displacement downwards and outwards of the eyeball and frontal pain. The apparent immunity of the maxillary sinus from infection, and orbital cellulitis due to infection from either the frontal sinus or through the orbital plate of the ethmoid bone.

9. BRYANS gives the statistics of the cases of small-pox that have recently occurred in Ontario. Of the eight-nine cases, thirty-four occurred in vaccinated persons and fifty-five in unvaccinated persons. In many of the vaccinated, twenty or thirty years had elapsed since vaccination. In all the vaccinated persons the disease was of a mild type, with one exception. This person had a very small cicatrix, and had been vaccinated about thirty years previous to the time of exposure. Of the seventy-seven persons vaccinated known to be exposed, thirty

contracted the disease. Of the forty-nine unvaccinated persons exposed, forty contracted the disease.

10. BRUCE reports a most typical case of primary tubercular disease of the Fallopian tubes, with secondary peritoneal infection of a very acute type.

### **The Canadian Journal of Medicine and Surgery.**

October, 1900.

1. Tuberculous Lesions from a Clinical Point of View. Edmond Owen.
2. The President's Address. R. W. Powell.
3. Address in Gynæcology. William Gardner.

November, 1900.

4. Recent Pathological Studies of the Blood. L. H. Warner.
5. Physical Training—Its Range of Usefulness in Therapeutics. B. E. McKenzie.
6. The Physicians Vaster Empire. John Hunter.
7. Intussusception in Children, with Illustrative Cases. A. Primrose.

December, 1900.

8. On Prolapse of the Stomach—Gastroptosis. Alexander McPhedran.
9. Mental Sanitation. R. W. Smith.
10. A Case of Congenital Ptosis, with Associated Movements of the Affected Eyelid, during the Action of Certain Muscles. James MacCallum.
11. A Brief Consideration of Gangrene and Mortification, Traumatic and Pathological, of the Extremities. Thomas H. Manley.

5. MCKENZIE gives the results of his observations on the correcting of deformities by exercises. The affections benefited by physical training, in the order in which good results have been observed, are hysteria, roto-lateral curvature, flat foot, round shoulders, pigeon-breast, flat chest, anæmia, parietic weakness, chorea, and imbecility. He considers that special physical training is necessary for the young by the conditions of modern life. The work should be made special and scientific having for its object the development and strengthening of every organ and faculty of the patient. Force from without the patient is largely employed in such cases as cannot of their own volition correct the deformity.

8. MCPHEDRAN contributed an instructive paper on prolapse of the stomach. This condition rarely occurs alone, but with it is associated

prolapse of some or all of the abdominal organs. In the majority of the cases that he has examined there has also been some degree of dilatation, although not sufficient in many of them to seriously affect the functions of the stomach. The abdomen may be prominent, flat, or even retracted. In the former class the prominence may be confined to the lower part, while above the umbilicus is depressed; in such the stomach is very low and is partly the cause of the undue fulness of the lower zone. If the stomach is not atonic, but possesses fair motive power, so as to be able to discharge its contents into the intestine in due time, so as to be empty before each succeeding meal, no symptoms need necessarily arise from the low position of the stomach, as its motor function is not interfered with. In some cases a nervous disturbance exists in addition to and apart from the gastric affection. Where the dilatation of the stomach is marked the size of the organ may be reduced by infolding the anterior wall by raising the greater curvature and suturing it to the anterior wall near the lesser curvature—gastroplication. The causation of gastric and other visceral prolapses is a complex one. The chief methods of treatment are diet, medicines, and abdominal massage and gymnastics. Foreign travel with due regard to avoidance of fatigue, mental and physical, is often of great benefit. Rest without pleasure is seldom of much benefit.

9. BRUCE SMITH points out that while preventive medicine is invading every other field, but comparatively few and feeble efforts have been made in psychiatry. The public should be enlightened with regard to the nature of insanity in order that they may properly estimate the influence of heredity as the most potent factor in the causation of the disease. They should be taught, as a preventive measure, that as the development of the morbid disposition is most insidious and is seldom recognized until late, the consideration of the family and the personal history of the individual should demand and receive early and careful attention. There should be a full recognition of the variability of individuals for bearing burdens and enduring strains, for many cases of insanity are justly chargeable to the imposition of burdens beyond the capabilities of the individual. Public sentiment must be enlightened before any restrictive measures can be beneficially enacted, for if the conditions under which many cases of insanity originate were properly understood, many attacks of the disease might be avoided. The study of child-character and the careful consideration of the variability in the development of mental phenomena during the period of growth in the child are all important, and the steps necessary to secure the adoption of these and all precautionary measures must first be taken by the family physician, who in the future must be prepared to advise, caution



and restrain, in exercising his influence in the prevention of mental disease.

10. MACCALLUM describes a remarkable case of a young woman afflicted with congenital ptosis, in whom the lid affected was opened involuntarily with every act of mastication, with every opening of the mouth.

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### **Dominion Medical Monthly.**

October, 1900.

1. President's Address, Executive Health Officers of Ontario. T. V. Hutchinson.
2. The Principles of Food Preservation. A. MacGill.

November, 1900.

3. President's Address, American Public Health Association. Peter H. Bryce.
4. Treatment of Appendicitis. J. Wishart.
5. Vitality of Typhoid, Diphtheria and Cholera Bacteria in Milk. W. T. Connell.

December, 1900.

6. Some Results of Correspondence with Medical Examiners. T. Millman.

5. CONNELL considers that his investigations prove that at a temperature averaging 70 to 72° F., the diphtheria bacillus, while it remains alive and virulent during the period of time in which the milk is commonly used, yet does not tend to multiply in such milk and is soon killed out in competition with the common milk saprophytes. The typhoid bacillus, once it obtains entry to milk, will readily and rapidly multiply therein and remain alive for long periods. This point assumes importance in relation to infection of one day's supply from the previous days by the use of improperly cleansed utensils. The spirillum of cholera rapidly multiplies in sterilized milk at the room temperature and remains alive in it for long periods. In infection of milk with this microbe and with the lactic acid germ the cholera vibrio multiplies for from six to eighteen hours, when its multiplication is checked by the lactic acid germ, which soon obtains the ascendancy and gradually kills out the cholera vibrios. The danger from cholera infected milk is, therefore, in the earlier stages of the infection, which is the period when milk is used.

**The Canada Lancet.**

October, 1900.

1. A Case of Colloid Goitre, Involving the Middle Lobe of the Thyroid Gland, Associated with Asthmatic Attacks and Resulting in Sudden Death. H. B. Anderson.
2. The Alkaloids. Llewellyn B. Ashton.
3. A Chinese Hospital, a Visit to the "Tung Wah" or Native Chinese Hospital in Honk Kong. Colin A. Campbell.
4. A Case of Broncho-Pneumonia Treated by Oxygen Inhalation. J. T. Fotheringham and A. F. Stanton.

November, 1900.

5. Some Remarks on Forceps Delivery with Special Reference to Occipito-Posterior Cases. L. Bentley.
6. A Case of Hydatid Disease, Edmund H. Weir.
7. The Borderland of Mental Disease from a Practitioner's Standpoint. Ernest Hall.

1. ANDERSON relates the history of a case of goitre of the middle lobe of the thyroid gland, which resulted fatally. He states that judging from the literature of the subject, goitre limited to the thyroid isthmus is very rare, in fact he has been unable to find any case recorded. Involvement of the isthmus with coincident involvement of either one or both lateral lobes is common enough. The occurrence of periodical attacks of the most urgent dyspnoea, constituting the so-called 'thyroid asthma' is by no means of rare occurrence. It occurs earlier and is more urgent and dangerous to life when the enlargement is limited to, or affects chiefly the middle lobe. Retrosternal goitres, small though they be, are particularly liable to produce the most distressing dyspnoea. The dyspnoea is usually explained as being due to the direct pressure of the goitrous tumour on the trachea or to irritation of the recurrent laryngeal nerve. The periodical character of the attacks is due to the tendency to rapid increase in size of the gland at certain times from vascular changes. It would appear that these cases of thyroid dyspnoea are not infrequently mistaken for true asthma, especially where the neck is short and fat, and the goitre is smooth and regular in outline, or where it involves the isthmus, or is retrosternal. Death may result during these attacks of dyspnoea and often suddenly, the possibility of which is important from a medico-legal point of view.

6. WEIR relates the results of an autopsy on a man aged 54, a native of Canada and a clerk by trade, who had never travelled outside of Ontario, his life having been spent mainly in Toronto and in the neighbouring country towns. He had been admitted to the Toronto General Hos-

pital for symptoms of chronic parenchymatous nephritis and had died with marked indications of pulmonary œdema. There were two ulcers in the duodenum, and a cyst upon the anterior surface of the middle of the right lobe of the liver about 2" by  $\frac{3}{4}$ " in size, which had microscopically the characteristic structure of the cyst wall as described by Leuckart, and scolices and hooklets were found in large numbers in the fluid which presented all the characteristics, both chemical and physical, of hydatid fluid.

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### Canada Medical Record.

October, 1900.

1. Syphilitic Gummata of the Spinal Cord Treated Successfully by Very Large Doses of Iodide of Potash. F. W. Campbell.
2. Procedure in Post-Mortem Medico-Legal Examinations. C. A. Hebbert.
3. Abstract of a Paper on the Operative Treatment of Complete Prolapse of the Uterus in Elderly Women. A. Laphorn Smith.

December, 1900.

4. Odds and Ends in Ordinary Practice. A. D. Stevens.
5. Notes from the Clinic of Dr. F. W. Campbell.

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### The Maritime Medical News.

October, 1900.

1. Diseases of the Mastoid Process. G. H. Cox.
2. Septic Process in Eye Disease. G. R. Crawford.
3. Some Experiences in the Methods of Treating Hernia by Operation. F. J. Shepherd.
4. The Operative Treatment of Complete Prolapse of the Uterus in Elderly Women. A. Laphorn Smith.
5. Cataract Operations. A. E. Kirkpatrick.

December, 1900.

6. Physicians, Surgeons and Specialists. F. W. Goodwin.
7. The Radical Treatment of Chronic Otorrhœa and Aural Polypus. J. H. Morrison.
8. Notes on a Case of Myxœdema. H. H. MacKay.

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### La Clinique.

Octobre 1900.

1. Du Traitement de la Rétention Incomplete Aiguë chez le Prostatique. Adelstan de Montagny.

**La Revue Medicale.**

Octobre 3 1900.

1. Sur Le Traitement de l'Ophthalmie Purulente des Nouveaux-Nés.  
Jéhin-Prume.

10, 17, 24 octobre 1900.

Revue des Journaux.

31 octobre 1900.

2. Note sur le Traitement de la Phlegmasia Alba Dolens par une  
Solution Picriquée. M. T. Brennan.
3. Note sur le Traitement de la Folliculite de l'Aisselle par le Gazoline.  
M. T. Brennan.

7, 14, 21 novembre 1900.

4. La Cure de Repose chez les Phtisiques. C. T. Samuel Bernheim.

28 novembre 1900.

Coq-à-l'âne Médicaux.

5, 12 décembre 1900.

5. De la Désinfection. J. I. E. Laberge.

19 décembre 1900.

6. La Panniculite et la Callilite Pelvienne Extra-Génitale ou Juxta-  
Osseuse. M. T. Brennan.

26 décembre 1900.

7. Evidemment Préalable et Hémisection Médiane Antéro-Postérieure  
dans un Cas de Fibrome Intra-Ligamentaire Enclave et d'Utérus  
Fibromateux. M. T. Brennan.

**L'Union Médicale du Canada.**

Novembre 1900.

1. Grossesse et Tuberculose. Samuel Bernheim.
2. Polypes Utérins. Eugène St-Jacques.
3. Pathogénie des Fibro-Myômes Utérus. A. Marien.
4. Albuminurie Pendant le Grossesse. E.-A. René de Cotret.
5. Sîrrose Atrophique du Foie. E. P. Benoit.

**Le Bulletin Médicale de Quebec.**

Octobre 1900.

XIIIe Congrès International de Médecine.

Novembre 1900.

2. Des Brûlures. S. Geo. Paquin.

Decembre 1900.

2. La Défense Pratique Contre la Tuberculose. Samuel Bernheim.



## Reviews and Notices of Books.

ORTHOPEDIC SURGERY AND OTHER MEDICAL PAPERS.—By HENRY JACOB BIGELOW. Boston, Little, Brown & Co., 1900.

✓ THE MECHANISM OF DISLOCATION.—Litholapaxy ; or Rapid Lithotripsy with Evacuation. By HENRY JACOB BIGELOW. Boston, Little, Brown & Co., 1900.

These two volumes contain the principal papers published by Professor Bigelow. These papers possess great interest, giving to the reader as they do the thought and method of working and results achieved by a man who made a decided impression on his generation and led his profession a big step forward. Bigelow's work upon the hip joint, and on the treatment of vesical calculi is classical. He brought litholapaxy to its present state of perfection. Indeed, with the exception of Fowler's slight improvement in the lithotrite, the operation of litholapaxy is to-day as Bigelow left it. What greater evidence could be brought forward to demonstrate the thoroughness and scientific precision of his work ? The volumes are very neatly gotten up and would prove ornamental and interesting volumes in any medical library.

G. E. A.

✓ A PRACTICAL TREATISE ON GENITO-URINARY AND VENEREAL DISEASES AND SYPHILIS.—By ROBERT W. TAYLOR, A.M., M.D., Clinical Professor of Venereal Diseases at the College of Physicians and Surgeons (Columbia University), New York; Surgeon to Bellevue Hospital, and Consulting Surgeon to the City Hospital, New York. Second Edition. Lea Brothers & Co., New York and Philadelphia, 1900.

The first edition appeared in 1895. The advances made in five years are sufficient to fully justify the issue of a revised edition. The present volume is thoroughly revised. The chapter on the anatomy and physiology of the penis, urethra, bladder, and prostate, which appeared in the 1895 edition, has been omitted from the present ; the author in the present volume addresses himself at once to "Gonorrhœa in the Male." This may be a wise change, and yet most men are the better for a brief review of the anatomy and physiology of the part about to be studied.

The book is most complete. In its dealing with both gonorrhœa and

syphilis it is most conservative and yet up to date. The illustrations are numerous and clear. It is well indexed, which is an important thing in these days. Altogether the book may be commended and confidently recommended.

*G. E. A.*

A DICTIONARY OF MEDICAL SCIENCE. By ROBLEY DUNGLISON, M.D., LL.D. Twenty-Second Edition with Appendix. Thoroughly Revised and Greatly enlarged by Richard J. Dunglison, A.M., M.D. Lea Brothers, Philadelphia and New York, 1900.

The appearance of the twenty-second edition of this standard work in the last year of the century gives us some idea of the progress medical science has made since the late author, Robley Dunglison, published the first attempt at medical lexicography, over seventy years ago. As a tribute to his memory the author's portrait prefaces the present edition.

Few have any idea of the rate at which new words are coined, and it seems almost impossible that, as the editor states, 65,000 new terms should have been added during the past decade. The twenty-first edition, issued seven years ago, contained 44,000 new words and to this again 15,000 are added in the present edition. Many of these new terms are connected with the increase of knowledge in such branches as bacteriology and synthetic chemistry, and many are related to therapeutics and materia medica owing to the recent discoveries of new drugs and combinations.

The work has so long held the position of the authoritative lexicon of the medical sciences, that it needs no words of praise from us. It covers all branches of medicine, including dentistry and veterinary science. The book makes an imperial octavo volume of 1,350 pages. Price, \$7.00.

LEA'S SERIES OF POCKET TEXT-BOOKS—CHEMISTRY AND PHYSICS—A MANUAL FOR STUDENTS AND PRACTITIONERS. By WALTON MARTIN, Ph.B., M.D., and W. H. ROCKWELL, JR., M.D. Series edited by Bern B. Gallaudet, M.D. Illustrated, 137 engravings. Lea Brothers & Co., Philadelphia and New York, 1900.

The authors of this book state in the preface, that although it would be impossible to present in a volume the size of this a complete treatise on chemistry and physics, yet, so far as a knowledge of these subjects is required by medical students, the manual contains all that is necessary. The authors have certainly made good use of their space, and given us a book compact, and at the same time containing all that is essential for both students and practitioners of medicine, and have presented rather dry facts in a most attractive manner.

The section on Organic Chemistry is written by Dr. Martin; that on

Inorganic Chemistry is based on Struther's chemistry. There has been no attempt made to give chemical compounds which are used also as drugs, more than usual importance on this account, the fact that they are made use of in this respect in medicine being merely alluded to under the heading "uses." The same can be said of the uses of electricity in the section on physics, which is written by Dr. Rockwell. The book is thus equally suitable as an elementary manual for all classes of students.

The index is most complete, a valuable feature to the general practitioner, whose knowledge of chemistry has been gained in his student days, and who often wishes for a book of reference in which he can look up chemicals by their commercial names.

✓ CLINICAL EXAMINATION OF THE URINE AND URINARY DIAGNOSIS.

By J. BERGEN OGDEN, M.D., Instructor in Chemistry, Harvard University Medical School, etc. Illustrated. Philadelphia, W. B. Saunders Company, 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$3.00.

The author states that he has "long felt the need of a treatise which takes up in detail the subject of urinary diagnosis and the application of information furnished by careful chemic and microscopic examination of the urine." Hence, he divides his work in two parts, the first of which describes chemical and microscopical methods in detail, and the second deals with the diagnosis of renal conditions from the character of the urine. In this latter there is introduced also a brief enumeration of the prominent symptoms of each disease, and a section describing the peculiarities of the urine in certain general diseases of the body.

In the first part, the directions for the chemical and physical tests are very explicit and include little practical points, the neglect of which often causes confusing and uncertain results to the inexperienced. One should have no difficulty in putting into practice the methods recommended. While in most cases several different tests are described, in some instances the author has not stated with which the most reliable results are to be obtained. Not so, however, with regard to the tests for albumin, which the author rates, by comparative experimental study, as (1) nitric acid, (2) heat, (3) potassium ferrocyanide and acetic acid. No mention is made of the fact that in using the cold nitric acid test a few minutes often elapse before the albumin ring appears, in urines containing only a trace of albumin. The author's method of determining the amount of albumin present by the thickness of the ring formed with nitric acid, will hardly be found practicable to any but laboratory workers of long experience, and should not be taught to students.



PRACTICAL URANALYSIS AND URINARY DIAGNOSIS. By CHARLES W. PURDY, M.D., LL.D., Queen's University, Professor of Clinical Medicine at the Chicago Post-Graduate Medical School, etc. Fifth Revised and Enlarged Edition. Philadelphia, New York, Chicago. F. A. Davis Company, 1900. Price, \$3.00. ✓

It is not two years since we reviewed in these columns the fourth edition of Dr. Purdy's well known book, yet to the present edition there has been some new matter added and much of the text has been re-written.

It is to Dr. Purdy that we are indebted for a rapid and, it is claimed, reliable method of quantitative analysis by the use of the centrifuge, the instrument best adapted for the purpose at the present time being the electrical one devised by Purdy himself. In our review of the fourth edition we referred to his method of estimating albumin in this manner, and he has added, in the present edition, methods and tables for chlorine and sulphuric and phosphoric acids as well.

A chapter, too, has been introduced on the use of the microscope in urinary analysis. This will be found most acceptable to students, who as a rule often fail to observe bodies, *e.g.*, hyaline casts, by using too much light, and even an Abbey condensor, in studying urinary sediments.

Of the changes made in the general description of methods, etc., it is impossible to draw attention in detail; they are all, however, in the way of simplifying and improving a book which has come into wide use among the medical men of this country.

A MANUAL OF SYPHILIS AND THE VENEREAL DISEASES. By JAMES NEVINS HYDE, A.M., M.D. and FRANK HUGH MONTGOMERY, M.D. Second Edition, Revised and Enlarged. Philadelphia, W. B. Saunders Company, 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$4.00. ✓

The second edition of this treatise on syphilis and the venereal diseases has been rendered much more valuable as regards illustrations by the introduction of a considerable number of Mracek's plates depicting the cutaneous lesions of syphilis from the Hand-Atlas of Syphilis and Venereal Diseases. The book also has been to a large extent rewritten and the chapter on gonorrhœa has been brought up to present ideas as regards treatment. We note that the authors look upon gonorrhœa as a much more serious disease, when viewed from all standpoints, than syphilis. To this we are inclined to subscribe, and many of the constitutional effects of gonorrhœa would undoubtedly be avoided by careful treatment, were it not for the popular idea that "clap" is a trifling disease which can be treated over the counter of a drug store.



With regard to the stage at which syphilis ceases to furnish an infectious virus, the authors believe that "though the power to furnish a virus is gradually lost in every surviving subject of syphilis, it is safest to hold that any awakening of the morbid process at a late date may, however rarely, render such persons dangerous to the uninfected." The sole constant characteristics of every chancre they define as, (1) an incubative period preceding its appearance, (2) sclerosis of the base of the lesion varying widely in degree, and (3) simultaneous enlargement and induration of the nearest glands (anatomically) to the sore. The often misleading, though convenient, division of syphilis into primary, secondary and tertiary stages it is thought wiser to abandon, the graver forms of the disease being grave from the first, and often "developing the so-called 'tertiary' symptoms with a degree of rapidity as startling as it is portentous." The various clinical forms of the disease are conveniently grouped into four main divisions, roughly, benign and malignant, with or without relapsing or profound lesions.

The chapter on treatment is admirably written, mercury being chiefly valuable in the early lesions and iodides with or without mercury in the later manifestations. The authors consider that the preparations of mercury in the order of value, are the protoiodide, the bichloride, the biniodide, the tannate, blue pill, and the gray powder.

We have much pleasure in recommending the book as reliable and up to date in every particular.

✓ A TREATISE ON FRACTURES AND DISLOCATIONS. By LEWIS A. STIMSON, B.A., M.D., LL.D. (Yale), Professor of Surgery in Cornell University Medical College, New York. Third Edition, Revised and Enlarged. Octavo, 842 pages, with 336 illustrations and 32 full-page plates. Philadelphia and New York: Lea Brothers and Company, 1900.

The second edition (which was practically a new book) of this work appeared in 1899, and was received with so much favour that it was exhausted within the year. In the present, third edition, many important changes and additions have been made, notably the statement of the advance in the knowledge of traumatic hæmatomyelia. The number of skiagrams adds greatly to its value and of these no less than thirteen illustrate the conditions seen in recent and old fractures at the lower end of the radius. The bibliographical references have been largely augmented, and the new illustrations and alterations in the text have increased its size by about twenty pages.

The work is a very excellent one, and as the teaching throughout is progressive but sound, is valuable for reference. K. C.

NURSING AND HYGIENE. By R. LAWTON ROBERTS, M.D. (Lond.), D.P.H. (Camb.), M.R.C.S., Eng. Third Edition. Pp. xxv. and 223. London, H. K. Lewis, 136 Gower Street, W.C., 1900. ✓

This little volume, which covers fully the ground required in the advanced nursing course of the St. John Ambulance Association, is a companion volume to *Ambulance Work* by the same author, and will serve as a valuable guide not only to the nurse-in-training, but more especially to that large class of people who have neither the desire nor the intention to follow that calling, but who wish to acquire a good, every day knowledge of nursing and of the laws of health. The language is plain, terse, free from technical terms and very readable. In the appendix some valuable information is given concerning filters, tuberculous disease and how to arrest it, and the various methods of disinfection. K. C.

AN AMERICAN TEXT-BOOK OF PHYSIOLOGY. Second Edition, Revised. Volume II. Philadelphia and London, W. B. Saunders Company, 1901. Canadian Agents, J. A. Carveth & Co., Toronto. ✓

This volume treats of the general physiology of muscle and nerve, the cerebral nervous system, the special senses, the physiology of muscular mechanisms, and reproduction. In each case the work is, speaking generally, well done; however, as the chief distinctly new matter in this second edition is to be found under the Central Nervous System, one naturally turns to the chapter on this subject with large expectations. These are scarcely realized. There is not that evenly balanced, well digested résumé of this great subject that could be wished. There are omissions, both in text and illustrations, incompatible with the general character of a work of such pretensions, while matter has been introduced that can hardly be expected to interest the general student of physiology, as it does certain specialists such as the author himself. The treatment is at times rather narrow, and gives evidence of undue leaning towards the views of American investigators. Nevertheless the chapter, as a whole, is a distinct improvement on the original one, as is the book, and this volume, like the first one, will probably be generally acceptable. W. M.

## **Society Proceedings.**

### **MONTREAL MEDICO-CHIRURGICAL SOCIETY.**

*Stated Meeting, January 11, 1901.*

JAS. PERRIGO, M.D., PRESIDENT, IN THE CHAIR.

#### **Traumatic Neuritis.**

DR. F. G. FINLEY showed a man with a traumatic neuritis of the left arm. A full report will be found at page 199.

DR. F. J. SHEPHERD stated that from the history of the case, without having seen it, he had advised an operation, having been pretty sure from the description that there was division of the nerve. He related a case somewhat similar to this in which paralysis of the musculo-spiral had resulted after a fracture of the humerus in a child. On operating, the nerve was found intact, and since there had been considerable improvement in the paralysis. A possible explanation was that a fragment of the bone had bruised the nerve.

DR. J. M. ELDER had been particularly interested in the case as he had been following the cases recorded by British and American surgeons in the South African and Spanish-American wars. They had shown that a nerve might be rendered quite functionless if a high velocity bullet passed near the nerve without actually injuring it. This only occurred where the bullet had obtained great velocity.

DR. SHIRRES referred to the fact that Vausmann had shown that if the sciatic nerve were stretched sufficiently it would be followed by loss of sensation and paralysis of the parts supplied by it. He thought it was possible in this case that the velocity of the bullet had stretched the nerve.

DR. BELL was more inclined to look upon the injury to the nerve as resulting from neuritis, rather than from stretching. He related a case in which paralysis had followed dragging on a nerve during operation; it had not occurred immediately after the operation and developed only on the following morning.

#### **Blastomycetic Dermatitis.**

DR. F. J. SHEPHERD presented before the society a patient who had been under treatment for blastomycetic dermatitis, and who had been shown previously when only six weeks under treatment. His condition had much improved, although he had discontinued treatment for a time.

**Resection of the Colon—Osteomyelitis Cases.**

DR. JAMES BELL read the reports of the operations and history of the cases, and DR. EDWARD ARCHIBALD showed the pathological specimens. See page 95 of the February number.

DR. F. J. SHEPHERD thought Dr. Bell was to be congratulated on having removed successfully a malignant tumour together with a portion of the large intestine.

DR. E. A. ROBERTSON asked if there was any history of injury before the onset of the symptoms. He referred to a case of sarcoma in a child between two and three years of age, in whom a history of injury had preceded the appearance of the tumour and was thought to have possibly some connection with it.

DR. BELL, in reply, said that he did not know of any whatever in the history of the patient.

**Notes on Tuberculosis.**

DRS. C. F. MARTIN and F. T. TOOKE contributed this paper, which will be found at page 111 of the February number.

DR. F. G. FINLEY thought that now the hospitals had refused to admit well marked cases of tuberculosis, the ratio of latent to well marked cases was greater than formerly. He could fully confirm most of Dr. Martin's observations. He had frequently seen patients gaining weight even though they had considerable fever.

DR. RICHER thought that the facts brought forward by Dr. Martin ought to put the profession more on the alert regarding the early diagnosis of the disease. Tuberculosis often developed when least expected, and was even mistaken for typhoid fever. For this reason every method of diagnosis, although possibly not thoroughly well proved, should be made use of. Tuberculin in his hands, had proved satisfactory, both as a means of diagnosis and an agent to arrest the disease. Another method of diagnosis lately introduced might possibly be found helpful, this was the work of Arloing and Courmont of Lyons, which was practically the sero-diagnosis of Widal applied to tuberculosis. Time would show to what extent this new method of diagnosis was to be relied upon.

**Two Cases of Symphysiotomy.**

DRS. REDDY and SPRINGLE reported two successful cases of symphysiotomy, of which the following is a condensed account.

*Case I.*—Patient, aged 35 years, height 43 cm., weight 102 pounds, married eleven years. She has had five children, all removed by craniotomy after forceps, turning, etc., had been tried and failed. On September 2, 1900, labour began in the sixth pregnancy, patient having entered the Women's Hospital. A successful attempt at delivery by



symphysiotomy was made. The true conjugate was made out to be 7 cm.

After aseptic precautions had been taken, the symphysis was exposed and the cartilage separated, and all bleeding points stopped. The child was then turned, the feet being drawn firmly down until the child's body would come down no further, when Dr. Springle cut the supra-pubic ligament with a pair of scissors and the bones separated, the infra-pubic ligament tearing off one side. The separation measured 4 cm. (1.75 inches). The child was now delivered without any great difficulty. The patient's legs were kept flexed on the abdomen during the whole of the operation as well as during the convalescence, whenever it was desired to put her on the bedpan or change the bed, etc., this tending to keep the bones from separating. Recovery was uneventful, and at the end of fourteen days (without permission) she was walking about. There was no pain, good union, and the child was well and nursing.

*Case II.*—Patient, aged 28 years, weight 160 pounds, married six years. Has had four children, the first of which was delivered with great difficulty by the aid of forceps and, although living, is badly deformed and partly paralyzed. The second died during birth (forceps). The third child, a difficult forceps case, lived one month. Being again pregnant she desired to save the child, and came into the Women's Hospital in labour on September 29, 1900.

On examination, the antero-posterior diameter of the brim was found to be 8 cm. After the usual precautions, the same steps were followed as in the last case, the separation, however, being not quite so great being probably not over 3 cm. A healthy child weighing eight pounds was delivered. The patient was treated in the same way as the last and made an uneventful recovery, insisting on going home on the 15th day.

In neither case was there a rise of temperature at any time during convalescence; no hæmorrhage, little or no pain in the pelvis. Both cases recovered as well as an ordinary simple case could do, and were well at the present time.

DR. D. J. EVANS, while congratulating Drs. Reddy and Springle on the very successful cases reported, confessed to having looked upon symphysiotomy with a certain amount of disfavour recently. The question as to whether it was a suitable operation for the general practitioner to undertake was open to criticism. The results would have to be followed more closely before the matter could be settled. Of the four cases that the speaker had been personally concerned with, two were unsatisfactory, one from pelvic trouble for two years after operation. Dr. Evans then quoted Williams of Philadelphia as showing, by

collecting as large a number of cases as possible at present, that the maternal mortality was about equal for Cæsarean section and symphysiotomy, but that the child mortality was much higher in the latter. As regards the after effects, the advantage was in favour of Cæsarean section. The speaker thought it was an extremely difficult matter to determine whether the child's head was likely to mould or not, and this factor could not be taken into account in deciding upon what plan of operation to adopt. He stated that in his own cases symphysiotomy had been followed by a rather difficult forceps operation, but after hearing the paper read he would feel inclined to try version, as the authors of the paper had done, in those cases where the head did not descend into the brim after cutting the symphysis.

DR. KENNETH CAMERON related the subsequent history of a case of symphysiotomy which he had reported before the society in 1895. In 1893, a very small child of about five pounds was delivered by forceps, and twenty months later the operation of symphysiotomy was performed for the delivery of another child of seven and a half pounds. After this the woman complained of considerable pain in the right iliac joint for about four months. Again after twenty months she was confined and delivered, after a very short labour and without the aid of forceps, of a child weighing nine pounds. Four years later, at her fourth confinement, the head was found moulding in the pelvis. After waiting some time and failing to extract with forceps, he had sent for Dr. Evans who had applied the axis-traction forceps, but also failed to make any impression, so it was decided to perform craniotomy. As the first application of the forceps had injured the child, neither Cæsarean section or symphysiotomy would have been of any avail in saving its life, but it was doubtful if the latter could have been performed without considerable difficulty, as the symphysis was firmly united. The child had been a very large one, weighing between ten and eleven pounds.

DR. REDDY, in reply, could not agree with Dr. Springle in looking upon the operation as an easy one for anyone to perform. It required a surgeon. He thought the operation had only a narrow range of usefulness. Outside, in suitable cases, symphysiotomy was to be preferred but in hospitals, Cæsarean section was best. A great part of the after treatment was in keeping the bones in actual apposition for a considerable period.

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*Stated Meeting, February 8, 1901.*

JAMES PERRIGO, M.D., PRESIDENT, IN THE CHAIR.

Dr. Charles H. Gurd, of Montreal, was elected an ordinary member of the society.

### **A Peculiar Case of Appendicitis.**

DR. J. M. ELDER presented this case. See page 201.

DR. LAPHORN SMITH considered the case instructive from many points of view. It showed that no matter how difficult a matter may seem it was better to operate than to leave it alone. He thought the probable sequence of events was that the hernia of the appendix had first occurred and resulted in strangulation with the development of the inflammatory condition.

DR. G. E. ARMSTRONG congratulated Dr. Elder, and thought that one of the secrets of his success was that he had had here to deal with what was practically an extra-peritoneal condition. He asked Dr. Elder if the sac of the hernia was involved.

DR. BELL was inclined to look upon it as primary hernia with secondary appendicitis.

DR. ELDER, in reply to Dr. Armstrong, said that hernia had simply come down to the tunica vaginalis, and that there was no peritonitis, as the strangulation had practically prevented it.

### **Abscess of the Lung.**

DR. JAMES BELL read a paper on this condition and showed a patient on whom he successfully operated. A report of the case will be published in our next issue.

DR. J. M. ELDER referred to a case of abscess of the lung which he had operated on in much the same way as Dr. Bell, and with a successful result. The patient came to the hospital and was operated on for hæmorrhoids. About a week later the woman had a chill, and developed septic symptoms with dulness at the base of the right lung, but an aspirating needle failed to find any pus, although later its presence was discovered in this manner. On resecting a portion of a rib, the pleural cavity was found obliterated, and on entering the lung, pus came away freely. Chloroform was made use of as the anæsthetic to diminish as much as possible the spasm, coughing, and vomiting that are apt to occur during ether anæsthesia.

DR. H. A. LAFLEUR thought that abscesses of the lower lobe were much more favourable as regards cure than those of the upper lobe. In a case which he had seen in the upper left mammary region, there had been great difficulty in getting drainage, and the cavity had closed up to a certain point, and then remained stationary for weeks and months, the patient all the time spitting up an offensive pus and having a purulent discharge from the sinus. In spite of this the patient had gained in flesh and strength.

DR. HAMILTON had seen Dr. Bell's patient several times during his stay in the hospital and had been struck with the fixedness of his



attitude in bed. He asked if Dr. Bell could explain why a slight change in position had been difficult. He had not seen it in other cases. Another interesting point was the great loss of weight for a non-tuberculous subject, 45 pounds in four months. He had seen the same thing in pleurisy where a tuberculous process was not demonstrable, the patient losing 30 pounds in less than three months and regaining rapidly when the condition was alleviated.

DR. G. E. ARMSTRONG had only had to do with cases of abscess in the upper lobe, and the difficulty had been to get the sinus to close. An essential feature to the success of the operation was adhesion between the two pleural surfaces, so that one could get access to the abscess cavity without collapse of the lung or infection of the pleural sac. Another essential feature was the relation of the opening of the bronchus into the cavity. In the two cases he had operated on, he could distinctly feel that the opening of the bronchus was into the top of the cavity. This probably explained the coughing and free purulent expectoration, which took place on change of attitude, the pus collecting in the cavity poured out when the opening became dependant. A third important point was to get drainage from the bottom of the cavity. In two cases in which the opening had been made into the middle of the cavity, the sinus and coughing up of pus had persisted in spite of the gain in weight and strength. These patients had been advised to leave hospital for a while and then return, in order that an attempt might be made to make a fresh opening at the bottom of the cavity.

DR. BELL, in reply, stated that in one of his cases, a child of five, the abscess was in the upper lobe and was opened, near the apex of the axilla, into the lower part of the cavity. In the second case the cavity was fairly high up about the middle of the lung. The question of dealing with a tuberculous cavity was another matter altogether. It was rare to find a tuberculous cavity so favourably situated as a post-pneumonic abscess, where the lung was firmly adherent, so that there was not the risk of contaminating the pleural cavity.

The cause of the patient's attitude was that pointed out by Dr. Armstrong, the internal communication with the bronchus was so situated that while he lay on his side the expectoration came away gradually, but as soon as he stood up the fluid entered with a gush into the bronchus and set him coughing. The loss of weight was probably due to a septic condition persisting for four months.

The speaker did not think the site of the drainage tube ought to be important. These two cases had been drained from about the middle of the cavity, contraction must be allowed for. It was quite remarkable to him that these cavities did close up and not leave a sinus as,



from the fixed condition of the lung, it would often seem impossible for the cavity to contract sufficiently. A persistent sinus was probably due to this cause.

### **Intussusception in an Infant.**

DR. G. A. BROWN read the report of this case as follows:

Baby L., male, aged eleven months, has been nursed by the mother and during the last two months has had Nestle's food in addition to breast milk. The present illness began on a Friday night at half past twelve o'clock with vomiting and diarrhoea. I saw the baby about one o'clock a.m., and on examination, found an anæmic, anxious-looking infant, with a pulse of 120. The stools were found to contain green fecal matter mixed with bloody mucus. The baby was given a mixture containing bismuth and opium during the night, and in the morning its condition was much the same, pulse 140, temperature 100° F. During the night it had vomited frequently and had had four discharges composed of blood and mucus. The medicine was changed to bismuth powder by the mouth and an injection of starch and opium every four hours.

When I saw the baby late Saturday evening its condition was fairly good. During the day the infant took the breast and did not vomit, but had attacks of crying during which he had cramps, ending by a discharge of blood and mucus, but no fecal matter. On making an examination of the abdomen, I found a small mass in the region of the sigmoid flexure, and then I realized that I was dealing with a case of intussusception. I returned home, got my irrigator and attempted to reduce it, and after a good deal of manipulation I could not make out the tumour, so I decided to wait until morning, and if there was no change to have the case operated upon.

Sunday morning the tumour was quite apparent and much larger, and the condition of the baby was very good—temperature 100°, pulse 130. I got Dr. Bell to see the case with me and he confirmed the diagnosis and made arrangements to operate immediately.

DR. BELL had seen this case with Dr. Brown 36 hours after the diagnosis of intussusception. On opening the abdomen, he found that the intussusception had occurred at the cæcum, and that it had been forced down until it was well down into the rectum. All the attempts which he thought it wise to make, failed to reduce it, and he had then incised the sigmoid flexure, brought up the end of the mass, and attempted to reduce it in this way, and again failed. The portion of the bowel involved was then excised and the ends united by Monsell's method. The child died at 7 p.m., apparently never rallying from the shock.

In the speaker's experience of these cases of intussusception in infants

requiring operation, where reduction could not be effected and an operation of this sort had been undertaken, the results had been almost uniformly unfavourable. He attributed this, firstly, to the fact that 24 or 36 hours had usually elapsed before the operation was undertaken, and secondly, that young infants stood very badly a prolonged operation. This operation had occupied less than an hour from the commencement of the anæsthesia.

### **Fibroid Uterus and Shrunken Condition of the Omentum.**

DR. LAPHORN SMITH showed a fibroid uterus about the size of a cocoanut which he had removed a month previously by abdominal section. The patient was anæmic from prolonged hæmorrhages and had a cachectic look suggesting malignant disease. She was aged 65 years, the mother of twelve children. The speaker contended that, in view of the greatly reduced mortality of abdominal hysterectomy, this being his fifteenth case without a death, the operation should be undertaken more often, and before the growth had become large enough to produce symptoms by pressure on the sympathetic nerve or on the ureters. The liability to sloughing, suppuration, or malignant degeneration of the growth, was also pointed out, and also the fact that these tumours did not always stop growing at the age of forty-five. He strongly urged early operation.

Dr. Smith also wished to call attention to a condition of the omentum which had apparently not been noticed by writers of gynæcological text-books, namely, in cases of cancer of the omentum there was a shrunken condition of the omentum which could not be brought down to the abdominal incision, being about an inch wide and feeling like a piece of burnt leather attached to the lower border of the liver. He had noticed that when this condition was present, although there was no evidence of disease other than this in the peritoneum, the prognosis was bad, as the case was likely to prove malignant and die within a few months. He cited a number of cases illustrating this point.

DR. LAFLEUR was surprised to hear Dr. Smith say that the extension of cancer to the peritoneal membrane was a new fact. His impression was that it was one of the most common and familiar changes observed. One could often make out during life, if there was no ascites, a firm mass lying across the abdomen consisting of the fibroid contracted omentum.

DR. SMITH admitted that when he had stated that there was no mention of such a condition in the text-books, he had referred to works on gynæcology which he had consulted.

### **Omental Hernia with Abscess in the Sac.**

DR. JAMES BELL reported the following case:—

A. B. French Canadian, about 48 years of age, weighing over 200

pounds, has had a right inguinal hernia for from twelve to twenty years, and off and on has worn a truss, but not lately. Twenty-four days ago he was seized with symptoms of strangulation and vomiting, which became stercoral. There was great swelling and the hernia could not be reduced. After about three days the symptoms of strangulation passed off but it was impossible to reduce the hernia.

On admission to hospital the sac was very large and exceedingly tense; the temperature  $101^{\circ}$  F.; there was no pain; and the bowels moved freely after castor oil. On opening the sac, about a pint of horribly stinking pus escaped, and one can see the erosion of the parts by it. I dissected out the omentum, cut it off and then removed the sac. The tissues all around were œdematous and in a very unhealthy condition; for a septic condition, the patient, however, did very well.

The specimen here exhibited is the hernial sac and within is the mass of omentum removed. The important points are the unusually large amount of omentum, which forms the hernia, and the occurrence of an abscess in the sac.

DR. ELDER was of the opinion that it was in these cases of strangulated omentum that one was likely to get pus in the sac. He referred to a somewhat similar condition in an umbilical hernia he had operated upon. An interesting question was why in strangulated omentum pus should be formed and also why symptoms of intestinal obstruction should take place, just as if the bowel were involved.

### OTTAWA MEDICAL SOCIETY.

This Society met in Water Street Hospital on Friday, February 22, 1901.

DR. J. L. CHABOT, PRESIDENT, IN THE CHAIR.

#### Case Reports.

DR. TROY reported a case of *Tuberculous Peritonitis* recently operated upon. Twelve quarts of fluid were removed. The case was doing well.

SIR JAMES GRANT reported a case of *Hæmorrhage* at the fourth month of a young secundipara, lasting for three months, off and on, and sometimes severe. It was treated by rest in bed with ergot, and went to term. There was serious adhesion of the placenta to the uterus at the site of the hæmorrhage, requiring removal by the introduction of the hand. The case did well.

DR. TROY reported a case of *Rheumatic Fever* in a woman of 55 years recently treated to recovery by salicylates. During convalescence, though nine years past the menopause, she began to have a flow of blood

from the vagina. This she attributed to the salicylates. On examination, a large cauliflower growth was found affecting the cervix, which had hitherto caused no symptoms. In a day or two the characteristic odour developed.

### Hypnotics.

DR. SMALL read a paper on hypnotics. The result of his examination of many clinical reports in magazines, and enquiries of druggists as to the drugs most called for by physicians, went to show that the older drugs still held the field. Chloral, sulfonal, and trional, appeared to be the favourites. Dr. Small then showed tabular diagrams of a number of hypnotics, pointing out the chemical relations of the alcohol, the chloral, and the sulfonal series, respectively, and explaining the composition of several of the semi-proprietary remedies, such as somnal, hypnal, chloralose, etc. These were largely chloral with something else added. He discussed the physiological properties of the different groups and their relations to conditions of high or low blood pressure in the patient, the chloral series being useful in the former the sulfonal in the latter. The vegetable hypnotics were then reviewed, and their undesirable, associated actions in other directions pointed out. The interest of heroin (diacetyl-morphine) and peronin (benzyl-morphine) was alluded to, as the first examples of the replacement of elements in an alkaloid molecule by synthetic elements.

A long discussion followed as to the values, dangers, and uses of the different drugs mentioned.



T H E

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

EDITED BY

THOS. G. RODDICK,  
A. D. BLACKADER,  
GEO. E. ARMSTRONG,  
WILLIAM GARDNER,  
F. G. FINLEY,

JAMES STEWART,  
J. GEORGE ADAMI,  
G. GORDON CAMPBELL,  
FRANK BULLER,  
H. A. LAFLEUR,

WITH THE COLLABORATION OF

WYATT JOHNSTON.  
C. F. MARTIN,  
J. M. ELDER,  
D. J. EVANS,  
A. E. GARROW.

T. J. W. BURGESS,  
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E. J. SEMPLE,

H. S. BIRKETT,  
KENNETH CAMERON,  
C. W. WILSON.  
A. G. NICHOLLS,  
W. W. CHIPMAN.

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## THE TUBERCULOSIS CONFERENCE AT OTTAWA.

We congratulate Lord Minto upon having followed in the footsteps of our King Edward and upon giving the full support of his influence in helping forward the crusade against tuberculosis by calling the recent conference at Ottawa and allowing himself to be patron of the Society for the Prevention of Tuberculosis which originated in connection with that conference. Much can be accomplished in popularizing the knowledge of what tuberculosis is, how it can be prevented and how the condition of those suffering from the disease can be ameliorated, and much has been done throughout the whole extent of the Dominion by individual medical men and laymen towards this end. But isolated action is from its very nature largely ineffective; we can, for example, occasionally, through medical societies and by means of deputations, bring before the Federal and Provincial Governments the need for legislation and regulations tending to lessen the spread of the disease, but the good accomplished by memorials and deputations is, after all, very partial. A little advance is made and then, the matter not being kept before the Governments, recommendations are very apt to be forgotten and the subject becomes pigeon-holed until another spasmodic effort is made by those interested in the subject.

The establishment of a permanent association working steadily to one end, promises much better results ; such an association can in the first place disseminate pamphlets and literature bearing upon the subject far and wide, and this in such a way as to keep the matter constantly before the public. Its publications can influence all sorts and conditions of men from the school room upwards ; it unites together all those interested in the subject and supplies the organization which can with the least possible effort bring a steady and weighty pressure upon our legislatures.

It is a good move on the part of the Association, we think, that it has established its headquarters at Ottawa where, not only can it make its influence felt by the Government but also it can be sure of obtaining representatives from all parts of the Dominion upon its council from among members of Parliament and those whose business calls them regularly to the Capital. Had its centre been established elsewhere the difficulty in bringing members of the council together from all parts of the Dominion at stated intervals, would have been so considerable that almost inevitably the central organization would fail to be representative of the whole country.

We have in the preceding pages published some few of the addresses delivered at the Ottawa Conference. Those addresses do not in any way pretend to be scientific communications ; the object of the various speakers was to bring forward before the people in general the danger of tuberculosis and the need of preventive action. We have however printed them with pleasure believing that the general statements contained in these addresses will be of even more use to the ordinary medical men who wishes to influence those with whom he comes in contact in the right direction, than would carefully detailed tables of statistics or exact accounts of individual experiments. It is useful occasionally to sum up the general broad position of our knowledge upon a subject, and in these addresses such a summing up will be found.

Very much remains to be done, by the individual and by the Provincial and Federal Governments, but the more our people in general understand the problems which have to be faced, the more they see what has been accomplished elsewhere, the more rapidly will they and the Governments be prepared to take such action which will bring about that the 20th century becomes known as the century in which tuberculosis, once the greatest of all scourges and the most prominent item in mortality tables, became one of the less considerable of the diseases from which human beings suffer. Medically speaking there is not a little resemblance between leprosy and tuberculosis. We are apt to forget that the former of these diseases was so widespread in the

Middle Ages as to be a common bane of society; that even in those dark days the charitable established hospitals and what may be termed isolation wards all through the land; that, indeed, these leper hospitals were among the earliest of hospitals proper; and that, by the general combined action of all classes of society, leprosy was eradicated from central and the greater part of Southern Europe. There is no reason why combined effort should not produce the same result in connection with tuberculosis.

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The Pathological Institute at Berlin, containing the wonderful Verchow collection, has been destroyed by fire.

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Dr. Richard J. Dunglison, the editor of Dunlison's Medical Dictionary, of which his father, Robley Dunglison, was the author, died at his home in Philadelphia on March 4th.

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The twenty-seventh annual meeting of the American Neurological Association will be held in Boston on June 19, 20 and 21, 1901. The meetings will be held at the Boston Medical Library.

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The University of Pennsylvania has readjusted its course so that students in arts or science can complete their course and take the medical degree as well in seven years. A senior in either arts or science may be a freshman in the medical school.

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DR. HIRAM N. VINEBERG, Holmes' Medallist, McGill, 1878, has recently been appointed Adjunct Attending Gynecologist to the Mount Sinai Hospital, New York. Dr. Vineberg already holds the position of Attending Gynecologist to St. Mark's Hospital.

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According to the last annual report of the Minister of Agriculture, there are in the Lazaretto at Tracadie, N.B., twenty inmates, thirteen males and seven females. Their ages range from nineteen to sixty-four years; and seven of the inmates may be classified as being in the first stage, twelve in the second stage, and one in the final stage of the malady.

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DR. J. G. ADAMI, Professor of Pathology, McGill University, has been appointed Vice-President of the Section of Pathology and DR. DUNCAN MCEACHRAN, Dean of the Faculty of Comparative Medicine and Veterinary Science, McGill University, has been appointed Vice-President of the Section of Comparative Pathology, at the British Congress on Tuberculosis, which meets in London on July 22, 1901.

The Colorado State Medical Society offers a prize of twenty-five dollars for the best essay, if deemed worthy of the prize, pointing out the dangers to public health and morals, especially to young persons, from quackery as promulgated by public advertisements.

The competition is open to all. Essays must be typewritten in the English language, and submitted before May 15th, 1901. Each essay must be designated by a motto; and accompanied by a sealed envelope, bearing the same motto, and enclosing the name and address of the author. The essay receiving the prize will become the property of the Society for publication. Others will be returned on application. Essays should be sent to the Literature Committee, Room 315 McPhee Building, Denver, Colorado.

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The honorary secretary of the New Sydenham Society, Mr. Jonathan Hutchinson, in a letter published in the English journals, explains that the *raison d'être* of the Society has to a large extent been removed, now that "the supply of medical literature is very liberal, and works of real merit published abroad do not long wait for translation." Consequently it is proposed to issue in the next five years an atlas of clinical medicine, surgery, and pathology, "Pictorial Aids to Diagnosis," fasciculi of from eight to ten plates to be issued every two or three months. To do this the present membership of 1,400 must be increased to at least 2,000. In the event of the necessary number of new subscribers not being forthcoming, it is proposed to disband the society. In the latter event, it is possible that the publication of the atlas will be undertaken independently of it.

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An important decision has lately been rendered by the Supreme Court of California with regard to a physician's right to resign a case which he had undertaken. Dr. P. H. Flood, while in attendance upon a lady in confinement, decided that it was necessary to apply instruments, but her screams interfering with his attempts to do so, he finally left the house, against her husband's wishes. The lady sued for, and was awarded, \$2,000 damages in the lower court. On appeal to the Supreme Court, the decision was confirmed, the judge saying—"that a physician may elect whether or not he will give his services to a case, but having entered upon his employment, he is bound to devote to the patient his best skill and attention, and to abandon the case only under one of two conditions. First, when the contract is terminated by the employer, which termination may be made immediately. Second, when it is terminated by the physician, which can be done only after due notice, and an ample opportunity afforded to secure the presence of other medical attendance."



## MCGILL UNIVERSITY—FACULTY OF MEDICINE.

## REGULATIONS REGARDING THE DIPLOMA IN LEGAL MEDICINE SANCTIONED BY CORPORATION FEBRUARY, 1901.

The matter of the suggested diploma in Legal Medicine, the principle of which has been accepted by the Faculty, having been by that body referred back to the Education Committee, for fuller details, your Committee begs to report and to make the following recommendations:

That graduates in medicine who are candidates for the diploma in Legal Medicine of McGill University must present certificates of having attended the following courses:—

1. A course of six months scientific study in legal medicine consisting of systematic lectures and practical medico-legal and toxicological instruction in laboratories and elsewhere.

2. A course of six months training as assistant in medico-legal practice: The candidate shall produce a certificate, or certificates, satisfactory to the faculty, that he has continuously and actively assisted in the regular duties of some medico-legal Expert recognised by the Faculty. Of the two 6 months courses referred to in this and the preceding paragraphs, not more than three months shall be concurrent.

3. Curriculum. A special course—or courses—of lectures in legal medicine and mental diseases. 4. A practical (laboratory) course in toxicology. 5. A course of instruction in the law relating to medicine and to the status, rights and responsibilities of the physician. 6. A series of short courses with demonstrations upon the following subjects: (1) Methods of conducting medico-legal autopsies. (2) The methods of medico-legal microscopy; procedure in the examination of blood stains, etc. (3) Methods of Skiagraphy. (4) Methods of procedure in cases of wounds and injuries. (5) Methods of procedure in cases of assaults upon women and upon children. (6) Methods of procedure in cases of abortion and infanticide. (7) Methods of procedure in cases of the determination of sex and paternity. (8) Methods of procedure in cases of offense against morals. (9) Methods of procedure in the study of mental conditions. (10) Methods of procedure in examination for life and accident assurance. (11) Estimation of compensation for injury.

No candidate shall be admitted to any portion of the examination for this diploma until at least one full academic year has elapsed since his graduation in medicine.

The examination shall be both written and practical and shall extend over a period of not less than three days. It shall be conducted by examiners appointed by the Faculty.

The extent to which special instruction leading to the diploma will be given by the Faculty will be as announced from year to year.

## Proceedings of the McGill Medical Society of Undergraduates.

### THE EARLY HISTORY OF AUSCULTATION.

ADDRESS BY

F. G. FINLEY, M.D.

Gentlemen,—

The present century has been marked by a remarkable growth in all branches of scientific knowledge. During the past quarter of the century, in particular, discoveries have poured in so rapidly as to require constant application to keep abreast of the times in any one department of knowledge.

In the medical sciences advance after advance has in many subjects completely altered our point of view, and we now regard many morbid processes from a vantage ground not enjoyed by our predecessors. I need only refer to the knowledge gained by the study of bacteriology, how completely this science now dominates our views of pathological processes, and to what brilliant results it has led in the prevention and in some instances in the cure of disease.

Immersed as we are in the study of the medicine of to-day, we are, perhaps, a little apt to underrate and lose sight of the work of our predecessors. To-night I purpose tracing briefly something of the lives and work of some of the great masters of the earlier half of the century which has just passed, and in doing so I shall confine myself to a few of those whose labours served to establish the methods of physical examination in diseases of the chest. To their great credit it may be said that they discovered practically everything which the auscultator of to-day uses in his daily work.

Percussion was discovered and practised to a limited extent by an Austrian physician named Auenbrugger long before Laennec introduced auscultation.

Auenbrugger was born in Graz in Styria in 1722, and after graduating in Vienna he became physician to the Spanish Hospital of that city. After seven years patient investigation he published an account of his researches on percussion in a modest pamphlet. This obtained but little notice at the time and soon fell into oblivion, from which it was rescued by Corvisart in 1808, thirty years later. As the originator

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\* Read before the McGill Medical Society, March 15, 1901.

lived to 1809, he had the satisfaction of seeing his discovery recognized as a valuable method of investigation. Immediate percussion was the method adopted, the chest being struck by four fingers and careful comparison of the two sides made. It was not until 1828 that Piorry introduced the pleximeter and the method of mediate percussion came into use.

In the early part of the century the great centre of medical thought was at Paris. The French school had thrown itself with ardor into the study of morbid anatomy. Bichat had published his memorable work on the membranes and tissues of the body in 1801, and so laid a foundation for a system of medicine based on morbid anatomy.

Amongst the brilliant galaxy of physicians and teachers of the French capital, Théophile Laennec stands out prominently as the discoverer of the stethoscope and of the art of auscultation.

Born in 1781, he received a sound classical education which he utilised in later life in conveying his meaning to the foreign physicians following his clinic at the Charité. In 1800 he entered the Ecole de Médecine of Paris, after a preliminary course at Nantes. His ability and industry marked him from the first, and his notes of nearly 400 cases served as the foundation of his future work.

His teaching work commenced, like that of many other distinguished physicians, with pathology, of which he was an earnest student. In 1812 he was appointed physician to the Beaujon Hospital and four years later he received the post of chief physician to the Necker Hospital. It was here that he made the discovery of the stethoscope which has made his name so famous. In his own words: "In 1816 I was consulted by a young woman labouring under general symptoms of diseased heart, and in whose case percussion and the application of the hand were of little avail on account of the great degree of fatness..... I happened to remember a simple and well known fact in acoustics, and fancied, at the same time that it might be turned into some use on the present occasion. The fact I allude to is the augmented impression of sound when conveyed through certain solid bodies..... Acting on this suggestion, I rolled a quire of paper into a kind of cylinder, and applied one end of it to the region of the heart and the other to my ear, and was not a little surprised and pleased to find that I could thereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear. From this moment I imagined that the circumstances might furnish means for enabling us to ascertain the character, not only of the heart, but of every species of sound produced by the motion of all the thoracic viscera..... With this conviction I forthwith com-



menced at the Hôpital Necker a series of observations which have been continued to the present time. The consequence is that I have been enabled to discover a set of new signs of diseases of the chest, for the most part simple and prominent, and calculated perhaps to render the diagnosis of the diseases of the heart, lungs, and pleura, as decided and circumstantial as the indications furnished to the surgeon by the introduction of the finger or sound, in the complaints wherein they are used."

In 1819 his great work "*de l'Auscultation Médiate*" was published, the phraseology of which is retained to the present day. The enormous amount of labour involved by this work told on a constitution never robust and for a period of two years he was obliged to retire to the country for a much needed rest.

On his return to Paris numerous honours were showered upon him, and in 1823 he was appointed Professor in the Paris Faculty and Physician to the Charité. After the second edition of his work he again broke down and died of phthisis at the age of 45.

At the Charité, says M. Bayle, a distinguished contemporary, "we had the opportunity of admiring, at once, the delight he took in the instruction of his pupils, the deep interest he had in the improvement of his art and his courage in surmounting habitual sufferings in order to indulge in his favourite pursuits. His painful efforts were rewarded in a manner most agreeable to him by a numerous concourse of pupils and even of distinguished physicians from every country in Europe."

Laennec's name will ever be associated with the introduction of the stethoscope and with auscultation. His pathological views were also sound and with the addition of the bacillus his teaching on phthisis might do duty to-day. Laennec taught the doctrine of unity of phthisis, regarding its essential nature as due to a particular species of accidental production named tubercle. He distinguished under tubercle insulated bodies and interstitial injection or infiltration. Later in the century much confusion resulted from the teaching of the German school, and it was only on the discovery of the bacillus by Koch that we again recognized the essential unity of the disease, the lesions resulting from the action of the bacillus on the tissues.

Laennec's views on heart disease were to a certain extent inaccurate owing to his ignorance of the normal sounds. The bellows murmur of mitral disease was regarded as due to the systole of the auricle, and the same murmur at the aorta was regarded and correctly as due to systole of the ventricle. He recognised a thrill due to advanced disease of the mitral and aortic valve. Murmurs were noticed in hearts presenting no valvular change and were correctly regarded as unimportant



unless combined with other circumstances calculated to confirm the diagnosis.

Much of Laennec's knowledge was empirical and his close observation of clinical facts often led to a correct opinion even when he could give no definite reason for the facts noted. This fact is well shown by one of his illustrative cases where he diagnosed mitral stenosis from the presence of a bellows murmur preceded by a rough sound like the rasping of a file on wood.

The teaching of Laennec awakened the greatest interest in the diagnosis of thoracic disease. His pupils carried his teaching to all parts of Europe and eventually established it as a part of the routine examination of patients.

Like many other great discoveries the use of the stethoscope made its way slowly. In an autobiography Dr. C. T. B. Williams after studying with Laennec, tells of his being engaged to travel with a wealthy patient suffering from a delicate throat. He met two leading London physicians to receive instruction about the patient. Williams ventured to ask if an examination had been made with the stethoscope and received a reply in the negative "with as much contempt of manner as politeness would allow." Subsequent examination showed a considerable disease of both lungs, and the development of pneumothorax fully bore out the opinion of the young physician. Another incident is related of Hope at St. George's Hospital. Dr. — said he would choose half a dozen cases, write the diagnosis, and defy all the auscultators with their pipes, to throw more light on the case than he had already done. . . . . One case was chosen. Dr. — said it was "hydrothorax." Dr. Hope diagnosed "hypertrophy and dilatation of the heart, hydropericardium. Lungs gorged and emphysematous. Little or no hydrothorax." An autopsy subsequently confirmed Hope's opinion and silenced his opponent. Even as late as 1838 Sir Henry Acland states that he was ridiculed by a distinguished London physician for using the stethoscope, although in the Dublin school it had held its place for more than ten years.

Passing across the channel we may briefly refer to some of the early writers on chest disease.

James Hope 1801-1841 attained a great reputation for his work on the heart. He determined by experiment the cause of the sounds of the heart, and was therefore in a clearer position than Laennec in treating of valvular affections.

As a student he was President of the Medical Society in Edinburgh. After a period of study on the continent especially in Paris, he settled in London and followed closely the practice of St. George's Hospital, taking notes particularly of cardiac cases, to be afterwards used in his

book. He attained a position much earlier than most professional men, and although dying of tuberculosis at the age of 41, his talents and assiduity had placed him in the front ranks of London physicians. Hope did a good deal in clearing up many obscure points in cardiac pathology. He laid down clear rules for the diagnosis of aortic disease obstruction but was rather confused about mitral lesions.

Dr. C. T. B. Williams was one of the first to introduce the stethoscope into England. He recognized that Laennec's explanations of the physical phenomena were defective and showed a lack of knowledge of acoustics, and, in a little work published in 1828 he gave rational explanations of many of these signs which have been retained to the present day.

The Dublin school of medicine was justly celebrated in the first half of the century from the renown of its physicians and the excellence of their clinical teaching.

Stokes and Graves inaugurated an era of clinical teaching which has deeply influenced British medicine and their works were also read and appreciated on the continent. At least three of their pupils subsequently taught clinical medicine at McGill—the late Robt. L. MacDonnell, R. Palmer Howard and Dr. D. C. McCallum whom I hope may long be spared as an emeritus professor of this faculty.

Wm. Stokes, 1804-1878, was born in Dublin, and his name is familiar to you all as one of the partners in Cheyne-Stokes breathing. As a boy he caused his parents much anxiety by his indolence and distaste for any settled line of work. It is related of him that he was on one occasion awakened by his mother's tears, and comprehending the reason of her grief, was roused to active and enthusiastic efforts.

After studying at the Meath Hospital and pursuing a two years course of chemistry at Glasgow, he proceeded to Edinburgh where he came under the influence of Professor Alison, who implanted in him a love of clinical research.

Stokes early grasped the advances made by the French school in the diagnosis of thoracic disease, and in 1825, before taking his degree, he published a small work on the stethoscope for which he was fortunate enough to receive the sum of £70.

In addition to a great number of papers on medical subjects, Stokes wrote two books, which for long held their place as standard works, one on Diseases of the Lungs, and the second and later one on Diseases of the Heart. The latter I have often heard Professor von Leyden of Berlin refer to as "Das berühmte Buch von Stokes."

In private life Stokes was fond of music and art, and in trips to the Continent he took a keen delight in these subjects. He was also fond

of studying medical superstitions amongst the Irish peasantry, but judging from a story which he was fond of relating of the treatment of epilepsy he probably derived but few therapeutic hints from this source. Mr. Bland of Derriquin Castle, met one of his tenants, "Well, John," said he, "how is the boy." He's well, sir. "How did you cure him?" "I deluded him to your honour's bog." "And what did you do to him there?" "I drowned him your honour." "How was that?" "I brought him to the edge of your honour's bog-hole and threw him in suddint, and lept down upon him, and held him under the water till the last bubble was out of him, and he æever since had a return of the complaint, glory be to God."

Robert Graves, 1796-1853, is best remembered by his Lectures on Clinical Medicine, a work which called forth the highest praise of Trousseau, the great French clinician. Perhaps his greatest achievement was his introduction of a supporting treatment for the continued fevers, and it is related that he suggested as his epitaph, "He fed fevers."

In 1821, Graves introduced a system of clinical teaching in which the student came into actual contact with the patient. He based his method on the German school, regarding it as superior to that of Edinburgh and Paris. His colleague and former pupil Stokes ably seconded his efforts and rendered Dublin famous as a teaching centre.

As a young man Graves travelled extensively on the continent and his command of German was so good that he was arrested in Austria as a spy, the authorities believing that no Englishman could have such a mastery of the language. In Italy he travelled with Turner, the celebrated painter, but although the two lived together for months they are said for a long time to have remained ignorant of each others names.

Graves' method of teaching consisted in note taking and investigation of actual cases by students with subsequent discussion of these in all their bearings. In Edinburgh the students followed the professor into the wards, crowding round the bed, but never having an opportunity of examining for themselves, the notes of the case being written by the house-physician. As Graves' remarks "under this system experience is only to be acquired at a considerable expense of human life."

Corrigan, a contemporary of Graves and Stokes, graduated at Edinburgh in 1823. His name will ever be associated with the collapsing pulse of aortic regurgitation, the condition being described by him in house-physician. As Graves remarks "under this system experience is great success in his native city, and his income is said to have been as high as £9000 a year.

Although the McGill medical faculty was founded by Scotchmen, and as pointed out by Dr. Adami in his address last year, the Edinburgh



rather than the London traditions were thus introduced into Canada, yet I think you will recognize in the clinical teaching of McGill a method based on that of Graves and his colleague Stokes. Free entry to the hospital wards together with individual examination and reports of cases form a most important part of the clinical teaching of this University.

In 1845, Dr. Robert L. MacDonnell, after being educated in Dublin, removed to Montreal and commenced practice. He held the chair of Physiology or as it was then known of Institutes of Medicine from 1845 to 1849, and that of Clinical Medicine for the year 1849-50. Having accepted a call to Toronto he found his surroundings there uncongenial and returned to Montreal to find his hospital position and professorship filled by others.

MacDonnell was a man of strong and vigorous character and judging from some of his controversies he had an Irishman's love of a good fight. From an old note-book in the library it appears that he studied at the Meath Hospital under Graves and Stokes in 1837-40, and a number of cases are recorded by him seen at the Meath Hospital under these distinguished teachers. In one diagnosed as morbus cordis it is easy to recognise the advanced stage of mitral stenosis in the small weak pulse, the doubling of the second sound and in a remarkable fre-missement.

MacDonnell was the first to introduce the stethoscope to Montreal where it was soon adopted by the other practitioners, and more important than this he introduced a system of clinical teaching in the wards of the Montreal General Hospital based on that of the Dublin school. To one of his clinical clerks, Dr. MacCallum, we owe a report of a number of interesting clinical cases in the pages of the *British American Journal*.

MacDonnell was the first to describe contraction of the pupil with slight ptosis in intra-thoracic tumour. The case is reported in the *British American Journal*, 1850-51. The growth was a very large one projecting into the neck, involving the whole lung, and displacing the heart and mediastinum to the opposite side. At the autopsy the 3rd nerve was found healthy and the condition was referred to pressure on the sympathetic. Some years later when Gairdner described this sign in aortic aneurism, MacDonnell again pointed out that it was a pressure sign and might be due to any form of tumour. In connection with this well known sign of aneurism it is rather remarkable that his son nearly 40 years later was the first to prominently direct attention to tracheal tugging. The rare condition known as pulsating pleurisy was first described by MacDonnell. Amongst many other writings may be men-



tioned one criticising Addison's paper on "The Fallacies of Physical Diagnosis." In this article he certainly disposed of many of the arguments against the stethoscope in a satisfactory manner, vindicating the methods with which the teaching of Stokes and Graves had rendered him familiar.

MacDonnell was the first in this city if not in Canada to advocate and to use the microscope in clinical work, and it is curious to read at this day the opposition it met with in some quarters. His opponents, however, soon found that it was no easy task to escape unscathed in a wordy tussle with the ready and eloquent Irishman, and the microscope duly took its place as an aid to the physician.

I have, gentlemen, in this brief sketch been quite unable to refer to many who have performed yeoman's service in advancing our knowledge of thoracic disease. The chief interest in the lives of celebrated medical men frequently lies in the work they have been able to accomplish for science and humanity, and from its very arduous nature they are usually prevented from taking a leading part in the active political and social life of their time.

We must remember with gratitude that it is to the earnest workers of over half a century ago that we owe so much of our present knowledge of the diagnosis of thoracic disease.

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## Original Communications.

### NOTES ON AN EPIDEMIC OF MILD SMALLPOX.\*

BY

F. G. FINLEY, M.D.,

Assistant Professor of Medicine and Associate Professor of Clinical Medicine, McGill University ; Physician to the Montreal General Hospital.

During the past three years an extremely mild type of smallpox has been prevalent in many of the Southern and Northern States and in certain parts of Canada.

Owing to certain peculiarities in its clinical features, much confusion has arisen in the diagnosis of the disease. According to Probst it has been prevalent for months in some districts without its true nature being suspected.

The low mortality noticed in many districts has been a very striking feature of the epidemic. Thus in New Orleans there were 232 cases and 5 deaths; in Ohio, 1882 cases and 30 deaths (Probst); and in a series of 128 cases reported by Welch, there were no deaths.

Having recently had an opportunity of seeing a number of cases of this affection at Sudbury, a town with between two and three thousand inhabitants, I wish to refer to the chief clinical features of the malady and to contrast them with the more familiar type of the disease. I am much indebted to Drs. Howey and Arthur, and to the Local Board of Health for the opportunity of seeing these cases.

The disease arose from several sources. The first case in the district was an Indian on the reservation, who seems to have brought the disease from the Sault. Several other cases came in from the Lumber Camps in the neighbourhood.

Altogether I examined 14 cases in various stages of the malady. There were 12 males and 2 females, all being whites. One was a child of 6, 10 were between the ages of 18 and 30, and 2 between the ages of 30

\* Read before the Montreal Medico-Chirurgical Society, April 12, 1901.

and 50. The infrequency of the affection in children has been a very striking feature of the disease all through the country. In Welch's series of 128 cases in Philadelphia only 12 were under 10 years of age. These cases, however, were all treated in hospital so that conclusions drawn from such statistics are likely to be erroneous, as children with maladies of a comparatively mild character are usually kept at home. In mixed populations negroes suffer much more frequently than whites, owing to their neglect of vaccination. In Welch's series there were 122 negroes and only 6 whites.

The period of incubation could not be accurately determined in any of the cases seen by me, but so far as it could be fixed it was within the period of 8 to 20 days usually assigned to smallpox.

The first case in the district occurred in an Indian on the reservation, and was treated by Dr. Arthur. The disease appeared 20 days after his return from the Sault, where the disease was prevalent. Another patient, a woman, living 4 miles from Sudbury, visited an infected hotel on two occasions 8 and 13 days respectively before the outbreak of the disease. Her husband, who was unvaccinated, for some days after the exposure, Dr. Arthur writes to say, developed the disease 18 days after its onset in his wife, and presented the eruption of vaccinia and variola at the same time.

The prodromal symptoms varied considerably in intensity. In two cases the rash was the first sign of illness. Headache was present in about half the cases, and was in most described as severe. Pain in the back was usually associated with the headache; it was not severe and was in most instances described as of a slight aching character. Feverishness was usually complained of, and in two cases it was  $102^{\circ}$  and  $104\ 2\text{--}5^{\circ}$ , falling to normal on the appearance of the rash. Vomiting was not present in any of the cases, and the only other symptoms complained of in this stage were general soreness, anorexia and weakness.

The eruption appeared first and was most abundant on the face, particularly the forehead. The scalp was also attacked early and the rash then appeared on the trunk, especially the back, limbs, hands, palms and soles. The number of spots varied greatly. Some patients were thickly covered whilst others had only ten or fifteen spots on the whole body. In most instances the rash kept coming out for two days, and in two cases it took three and four days respectively before being completely out. As natural smallpox takes three days before the rash is completely out, it will be noticed that in this epidemic this stage was about 24 hours shorter. In the majority of cases the eruption appeared on the third and fourth day of the illness, *i.e.*, after 48 or 72 hours. In two cases the eruption appeared on the sixth day and in two, as already mentioned, it was the first sign of illness. The earliest lesions noticed were

hard shotty papules. The vesicular stage was ill-marked. In many instances the papules passed directly into the pustular stage, yellow cloudy centres appearing, rapidly developing into pustules with well-marked areolæ.

In many papules only the central part of the papule became pustular and rapidly died into a crust which fell off, leaving a raised hard papule with a depressed centre or a flat top. These papules with the central depression were seen as early as the sixth and as late as the fourteenth day of the eruption. The complete pustules died up and formed crusts which always appeared first and were most thickly set on the face. Suppuration never extended deeply and in no instance was a depression noticed after the separation of the crusts.

The time occupied by the evolution of the lesions was distinctly shorter than in ordinary smallpox. Pustules had usually passed into crusts by the 5th or 6th day of the eruption, and in no case were pustules seen after the 9th day, whilst in ordinary smallpox the pustules dry or rupture about the 10th or 11th day.

Secondary fever was not present in any case and its absence is to be attributed to the superficial character of the suppuration.

Welch regards the comparatively slight changes in the skin as the most striking feature of the disease. He points out that "the lesions, instead of actively involving the deeper layers of the cutaneous integument appear to develop between the outer epidermis and the layer of cells covering the papilla, and in the later suppurative changes the true skin becomes only mildly involved. Hence dermatitis and the consequent intumescence, so common on the face in *variola vera*, are either absent or very mild, and the necrotic changes are of course, greatly limited. The pustules, therefore, dessicate rapidly, forming comparatively thin scabs, which, when they have fallen off, leave pigmented spots and but little or no pitting. Even in cases exhibiting a considerable degree of confluence on the face the eruption behaves in the same way."

The general condition of the patients presented a remarkable contrast to ordinary smallpox. After the appearance of the rash they felt perfectly well, and amused themselves by smoking, playing cards, or walking about. Secondary fever was entirely absent even in cases with a thickly set pustular rash.

The protective influence of vaccination was very clearly demonstrated in the cases observed. Only two of them had been vaccinated; one of these presented three good scars and had a rather copious eruption. In the other vaccinated case there was only a single scar. Neither of these individuals had been revaccinated. In the cases reported by Welch,



only 17 out of 128 had been vaccinated, and of these a number had very poor scars. The great preponderance of the disease amongst the unvaccinated forms one of the strongest arguments that the disease is a true form of smallpox, and not impetigo or chickenpox as has been claimed by many practitioners.

No satisfactory explanation of the remarkably mild character of the infection has yet been offered. In this respect, however, the disease behaves like many other infectious processes. Epidemics of scarlatina, diphtheria and typhoid show remarkable variation of virulence in different years and in different epidemics. That the disease is not varioloid is proved by the selection of the unvaccinated, and again when the eruption appears it keeps coming out for two or three days, and does not all appear at the same time as in varioloid.

The gravity of the affection consists chiefly in the difficulty of isolating individuals. The symptoms are so slight that careless and ignorant people may readily walk about and form so many centres of contagion.

At any time this mild epidemic may assume a virulent type. Spalding refers to a mild case from Minnesota, visiting her home in Chicago. Two sisters, a brother and father, none of whom had been vaccinated, developed the disease. The father and sisters had a mild attack, but the brother had a severe confluent form of smallpox and died in two weeks.

The appearance of a patient suffering from the mild form of smallpox is unmistakable. The cutaneous lesions are similar to those occurring in ordinary smallpox, differing however from it in the more rapid evolution of the cutaneous lesions and in their more superficial character. The absence of secondary fever, the comparative mildness of the initial symptoms, and the remarkably low mortality are the most striking features of this type of the disease when contrasted with ordinary smallpox.

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## NOTES ON A RECENT EPIDEMIC OF SMALL-POX.

BY

ROBERT E. McKECHNIE, M.D., Nanaimo, B.C.

During November and December last we had about thirty cases of small-pox here and, as the type was abnormal and apt to lead to errors of diagnosis in the mild cases, I thought my experience might be valuable to the profession.

We traced the origin of our epidemic to Rosslyn, a coal-mining town on the Northern Pacific Railway in the State of Washington. Some 1300 cases occurred there without a death, and without a correct diagnosis. After the State authorities woke up and took the matter in hand with the diagnosis of a "contagious eruptive fever", by rigid quarantine it was speedily repressed. But many cases still exist throughout the State, forming centres from which, in this era of open and rapid



communication, it may spread to remote parts by the mail or by travellers.

My first case began with a slight chill, moderate fever, headache, a sore throat, and myalgic pains. The next day papules appeared on the face, trunk, and extremities, some of which were already vesicular. Two vesicles were also present on the soft palate. There was no sign of umbilication, nor was there any pain in the back. I did not see the case again for three days, when I found that the greater portion of the eruption had become pustular. The temperature and pulse were now normal and the patient eating heartily, only complaining of the soreness

of his skin, especially of his back where the tops had been scraped off the pustules by lying on them. The rash was universal, very thick on the face and back, and could also be felt on the soles and palms. Probably five per cent. of the vesicles and pustules showed a slight umbilication, but on careful examination under a lens, I found a hair in the centre of each umbilication. The eruption was very superficial with but slightly inflamed base to each vesicle or pustule. There was no tendency to coalesce, nor was the intervening skin either swollen or reddened.



I diagnosed the case as a very severe attack of varicella, by the papules appearing so early, becoming vesicular at once, becoming pustules inside of 24 hours, by the absence of severe constitutional symptoms with so very extensive a rash, by the absence of the characteristic smallpox



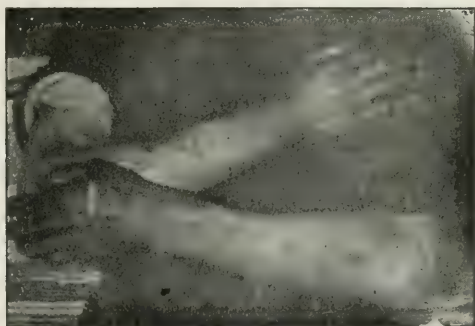
backache, by there being no smallpox odour, by the absence of secondary fever and of true umbilication, by the presence in town of many cases of chickenpox, which the patient had never had, and by the fact that there was no case of smallpox in the province, and the patient had not been out of town for months. Still I was wrong, as subsequent events proved, there having been four cases which showed true umbilication, although in other respects the cases were atypical.



The seventh case occurred in a woman who was confined one day, had a chill with temperature of  $102^{\circ}$  F. the next, an extensive measley rash the following day, which in twenty-four hours gave place to a papular eruption, which changed at once to a vesicular.

From a study of the thirty cases I have noted the following points: The first symptoms are like an attack of la grippe with, in half the cases, a sore throat, and no backache. I noted but one case which had this latter symptom, which yielded to a single dose of Dover's powder. There is a premonitory chill with elevation of temperature, myalgic pains, headache, vomiting generally, and the most constant symptom of all, sleeplessness. Nearly every case begged for something to induce sleep, so that I came to regard this as the most suspicious symptom before the rash appeared.

The initial temperature may be high or not, but did not average over  $102\frac{1}{2}^{\circ}$ , may last but one day or up to three, when there is a drop. Se-



condary fever is rare, about  $99^{\circ}$  being the average, with normal pulse, a strong appetite, and a general feeling of being quite well shortly after the rash appears.

The rash may appear as early as twenty-four hours after the initial symptoms, or as late as the third day, but the majority of cases developed it on the third day. The forehead and backs of the wrists are first affected. The papules may run through the vesicular stage into the pustular inside of two days, and begin to scab before pustulation would be reached in the ordinary type of the disease. The rash may be very extensive, or may be limited to a few scattered papules, etc. The photograph shown of two sisters in the same stage of the attack, illustrates this very well. Of the other photographs, one is that of a negro showing the abdomen, feet and legs in a severe type, another the rash on a sole and palm on the severer case of the two girls, and the last the arms of a moderate case.



Umbilication may be entirely absent or may be present in as high as 25 per cent. of the vesicles, but I have noticed that with an oblique light on the vesicles in early stage there is a distinct flattening of their summits, which is fairly marked in the majority of cases and represents an attempt at umbilication. The rash appears in most cases on the soles and palms, not so early as elsewhere, but can be felt before being seen.

There is very little inflammatory thickening of the skin even in cases where the rash is so extensive as to have the vesicles almost touching. An inflammatory halo can invariably be seen around the base of each pustule, but may be very faint. The thickness of the skin covering the vesicles on the backs of the wrists should be noted, as the deep-seated character of the eruption is there best seen. These vesicles are usually of a good size, very firm and tense, and pustulate much slower than those on the other parts of the body.

Contagion is not very great. Thus the first case, living in a hotel with isolation but imperfectly carried out, infected but four persons.

Several of the cases show slight pitting which may disappear eventually, but one case will have permanent marks.

The mortality is nil.

Formalin was used as an disinfectant with no failure, and is, I think, an ideal agent. Its acid fumes are readily neutralised by ammonia, either sprinkled on the floor or exposed in shallow pans in the rooms.

STUDIES UPON THE PLAGUE BACILLUS WITH SPECIAL  
REFERENCES TO THE PRODUCTION OF  
HAFFKINE'S PROPHYLACTIC.\*

BY

CHAS. H. HIGGINS, B.S., D.V.S.,

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(From the Biochemic Laboratory of the William Head Quarantine  
Station, Victoria, B.C.)

In March, 1900, I was transferred from my regular work in connection with the Outremont Experiment Station to the Public Health Quarantine Station on the Pacific Coast. It will be realized by all that the possibility that plague be introduced into Canada through our western ports from China or Japan, has been during the last year or two very considerable, indeed we know that there has been such introduction of the disease into San Francisco. To be fully prepared against its entry it was determined by the Government that all necessary steps should be taken, and my instructions were to establish a laboratory in connection with the Quarantine Station where I should manufacture Haffkine's prophylactic and should be prepared to diagnose by bacteriological methods any contagious diseases showing themselves on board the ships coming from the East.

Upon reaching Victoria I was met by Dr. Watt, the Superintendent of the British Columbia Quarantine, with whom I was to take up my temporary abode, who took me to the Quarantine Station where I established my laboratory and where I remained, working mainly upon the plague bacillus, for the next eight months. The Quarantine Station is on a rocky peninsula known as William Head, some ten miles by water, directly west of Victoria in the Straits of Fuca. A more beautiful situation could scarce be found anywhere, for across the Straits are the snow-capped Olympian Mountains with constantly changing colour and cloud effects, while the station itself, consisting of some 60 odd acres of very rocky land, has a beauty of its own. It is however not for me to dilate here upon these matters, my object is to detail my experiences in the work which I was thus called suddenly to perform, believing that this recital of my results may be serviceable to other workers upon this continent. The possibility that plague may gain a foot-hold in North America, still exists: the literature bearing upon

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\* This paper is in part taken from my report to the Minister of Agriculture for the year ending October 31st, 1900.

the bacillus and upon the preparation of Haffkine's prophylactic is very scattered and, especially, would there seem to be a want of a practical and sufficiently detailed account of the methods whereby to gain the most satisfactory growths.

Before leaving Montreal, the department empowered me to obtain and take with me such apparatus as I considered essential for the proper working of a laboratory. But the notice given me was so short, that while everything taken proved to be of the highest service, it will readily be understood that as the work progressed there was not a little apparatus that I greatly needed, apparatus which in my isolated position, thousands of miles from any good source of bacteriological supplies, it was impossible to obtain in time for that apparatus to be serviceable; while situated as was the laboratory many miles from Victoria and Vancouver, where the commoner forms of chemists' supplies could be obtained, it was not always an easy matter to rig up the simplest substitutes for ordinary pathological apparatus. I was thus often put on my mettle to obtain results in the simplest way possible. Add to this, I had access to no bacteriological literature save a few papers I had been able to collect in the course of a day or two before leaving, and the notes which I had hurriedly abstracted from the journals in the library in the Medical College at McGill. I had, in this way, but indications of the proper methods to pursue and had largely to work out my own salvation. My notes contained sufficient material to indicate for this special work some of the main difficulties in the preparation of culture media, but I had to determine from my own experience the minute details of the work in hand. It is remarkable how under conditions like these good results can, nevertheless, be obtained, and if my personal experience is of no other value, it is useful as showing that the plague bacillus can be cultivated and large amounts of prophylactic material manufactured under what may be termed, most elementary conditions.

There was no gas supply at William Head; in fact the laboratory had to be started from the very beginning, namely from a bare and plain wooden building designed for the detention of suspects, which had the one virtue of being well lighted. I installed however, an acetylene gas apparatus which worked admirably for furnishing both light and heat for my experiments. This was, I believe, the first time this gas had been similarly employed; the details of my application of this gas for temporary laboratory purposes, I hope to publish shortly elsewhere.

The apparatus installed, my first work was to familiarize myself with the bacillus pestis bubonicae. I owed the germ with which I worked to Dr. W. Wyman, surgeon-general to the United States Marine Hospital

Service, who forwarded the cultures to me on the request of Dr. Montizambert, the Director-General of Public Health for Canada. The germ is so different in its characteristics from any that I have hitherto studied that the work proved most interesting and instructive.

#### DESCRIPTION OF THE PLAGUE BACILLUS.

The bacilli are short thick, straight rods with rounded ends varying in length from 0.7 to 1.2  $\mu$ , and being about half as broad.

They sometimes occur in chains and have been observed in some cases to have a capsule. In fresh broth cultures they are often seen in chains resembling streptococci. In old cultures they sometimes completely lose their elongated shape and appear as cocci. The germ takes the polar staining, leaving an unstained central portion. In unstained preparations and in the hanging drop this polar arrangement of the protoplasm is noticed. The form of the bacillus varies greatly according to the media upon which it is grown and also upon its age.

#### CULTURAL CHARACTERISTICS.

*Broth.\**—It is upon broth that we get the characteristic growth of the plague germ. Rarely is anything seen on the first day even with the most virulent culture, but upon the second and third days, provided the flasks containing the inoculated broth are upon a solid bench and free from jarring, there are to be seen stalacite growths in the form of very fine needles. These stalactite growths upon the least jarring of the flask break away from the fat to which they are suspended sinking to the bottom, leaving the medium clear.

Various preparations of broth have been tried but the one found best suited to the work is that given in the formula to be referred to later. The germ does not thrive well upon broth to which has been added glycerine, glucose or lactose. The reaction of the media is also a very important point as a slight amount of acid or alkali will retard or completely destroy its growth. I obtained the best growths upon media rendered neutral to phenolphthalein, using a decinormal solution of potassium hydrate; this medium giving the strongest Haffkine's in the shortest time of any worked with at this laboratory.

*Gelatin.*—Upon gelatin there is nothing characteristic; the growth appearing after the fifth or sixth day as fine granular masses along the entire stab.

*Agar.*—Upon agar we get a characteristic look to plague cultures, the growth appearing as very pale masses upon the surface after the second day and having a shining slimy look. These masses upon being teased

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\* For the method of preparation see description given in connection with the manufacture of Haffkine's Prophylactic.



with a platinum wire draw out into long sticky threads and are easily moved about upon the surface of the agar. With a culture that has been grown in the laboratory for some time, even if fresh cultures are made upon the dry surface of agar tubes we get numerous involution forms which appear in the stained preparation as brownish masses swollen to such a size as to have completely lost their original shape. These rapidly developing involution forms are, as pointed out by Hankin and other observers, very characteristic of the plague bacillus and their rapid development in media containing certain proportions of common salt, would appear to be absolutely diagnostic. Upon agar plates there is little difference in the appearance of the germ from that seen in tubes of the same material.

*Blood Serum.*—Very slight growths only were obtained upon the blood serum at hand as it contained 7% glycerine, being originally put up for the growth of tubercle, and was not at all suited to plague work.

#### INOCULATION DISEASE.

The inoculation disease has been observed by me only in guinea pigs, they having been the most easily acquired animals.

*Symptoms.*—A guinea pig inoculated subcutaneously shows at the end of 24 hours marked depression, rise in temperature, enlargement of the lymph glands, particularly those of the inguinal region. He refuses food and water sitting in a corner of the cage motionless unless forced to move. The respirations are increased, the temperature rises to from 104-106° F., and remains at this point till death supervenes.

*Pathological Lesions.*—The lesions of plague as seen in the guinea pig are characteristic. We have first the enlargement of all of the external lymph glands. Those of the inguinal region are greatly enlarged and inflamed, much more so than glands in other portions of the body, which is probably due to the fact that they are nearer the point of inoculation. The chain of glands on either side nearest the point of inoculation was the first to enlarge. This fact conforms wholly with what has been observed in the disease in man. True suppuration was not observed in any of my cases. Upon opening the abdominal cavity the spleen is seen to be greatly enlarged and contains numerous necrosed, tubercular-like masses about the size of a pin head. The liver is enlarged and congested. The gall bladder is greatly distended with bile. The kidneys present little change to the naked eye. The lungs at times are affected and contain small inflamed masses about the size of a small pea. The bacillus pestis is found in all of the tissues and fluids of the body. With Klein (Ctbl. für Bakteriologie xxi, 1897, p. 849), I found that intraperitoneal injection of the bacillus in this animal leads to the develop-

ment of a thick, cloudy peritoneal exudate, rich in leucocytes and in chains of the bacilli.

#### VIRULENCE OF PLAGUE BACILLUS.

This varies greatly according to the media upon which it is grown and upon the conditions under which it is kept. The weakest germ worked with killed a guinea pig in seven days. This germ on being passed through a series of guinea pigs by direct inoculation from one animal to another rapidly increased in virulence till a germ of sufficient strength was obtained to kill a guinea pig in fifty hours. No attempts were made to increase its virulence beyond this point as this was sufficiently strong to meet the requirements in the manufacture of Haffkine's prophylactic. I do not know whether its virulence could be still further increased or not but think it possible within certain limits. This point I have not seen mentioned by other writers on this subject.

Grown upon ordinary culture media it soon loses its virulence. But I found that if I employed sterilized capillary pipettes filled these with a recent broth growth, then sealed them hermetically and kept them in a cool place in the dark, the virulence of the growth was retained for a period of at least three months. How much longer than this it would be possible to preserve the virulence of the bacilli I did not determine.

#### HAFFKINE'S PROPHYLACTIC.

Work in connection with this product has been the main feature in connection with the laboratory since its origin. The manufacture of this preparation while it is very simple requires great care in the preparation of the medium and in its subsequent treatment. The medium used was beef broth made in the following manner.

|                                   |          |
|-----------------------------------|----------|
| Liebig's extract of beef. . . . . | 5 grams. |
| Witte's Peptone. . . . .          | 10 "     |
| Sodium chloride, C.P. . . . .     | 5 "      |
| Water. . . . .                    | 1000 "   |

After thoroughly boiling this is neutralized to phenolphthalein, filtered and placed in flasks of suitable size for its manufacture. Situated as I was it can be understood that I had to employ ordinary bottles, Winchester quarts, etc., for making large growths, always endeavoring to get the largest that could be easily placed in the autoclave. The essential of such flasks is that the contained broth shall exhibit a relatively large surface exposed to the air. To each of the flasks sufficient butter fat was added to form a thin film over the surface. After this was added they were sterilized and ready for inoculation. Haffkine employed "Ghee," a clarified butter in common use among the natives

in India. What is the exact method of preparation of "Ghee," I do not know, nor have I seen this mentioned by any writer, but I found that excellent results could be obtained by taking a small amount of butter and heating it in the autoclave in a large amount of water. This process of heating and dissolving out the salts and acid bodies I repeated several times and kept a stock of this butter in a sterile flask to be used as desired. Inoculation of the above flasks was practiced immediately, from the affected organ or from a virulent culture; the best results being obtained when the virus was taken direct from the infected organ. These inoculated flasks are placed in an incubator and allowed to remain for a period of three to six weeks as the case may require. They are examined at least every four days and the crop of germs clinging to the under surface of the fat is shaken down in order that another crop may form. When it is seen that the successive crops are growing smaller and smaller the flasks are removed from the incubator and held for an hour at  $70^{\circ}$  C., which kills all of the living germs. While still hot it is drawn off into sterilized bottles, 10 c.c. being placed in each. These bottles are then sealed with a sterilized rubber stopper and immersed in paraffine to the neck, forming a thin film over the rubber stopper hermetically sealing it. Great care is essential in this process of bottling as there is great liability to contamination.

After the fluid has been bottled a number of these bottles are tested to determine the strength of the toxine and the amount required to immunize a guinea pig determines the proportionate amount required for man. The method of standardizing is, to say the least a very crude procedure. Attempts have been made to determine the strength of the toxine by chemical methods, but in this laboratory no success has been obtained by any of the methods tried. Such a method would be better than the one at present practiced.

A number of bottles from each flask are also placed in the incubator where they are allowed to remain for a period of two weeks in order to determine whether there has been a contamination of the product during the bottling, from imperfect sterilizing or accidents.

#### SYMPTOMS OF HAFKINE INOCULATION IN GUINEA-PIGS.

The symptoms of the Haffkine inoculation in the guinea pig are much the same during the first few days as those of plague, after which the animal gradually recovers becoming by the process an "immune," so that it will resist infection by contact and by subcutaneous inoculation of virulent cultures. If an exceedingly large amount of a virulent culture is injected into an immune guinea pig he succumbs, which is due to the fact that he is unable to withstand the shock and the poison-

ous effect of the toxine injected with the living bacilli. Under ordinary circumstances he is an immune and will remain so for a period of three months as shown by actual experiments. Whereas ordinary guinea pigs placed in the cages along with infected animals were certain to become themselves infected and to die 24 hours or so later than the inoculated animals, an immune guinea pig kept in the cages along with the infected animals showed no signs of ill health even when thus caged with successive series of infected guinea pigs for more than twelve weeks.

#### SYMPTOMS OF HAFFKINE INOCULATION IN MAN.

In connection with this inoculation I can only relate my own experiences as the conditions existing have not seemed to warrant the inoculation of any of the quarantine staff nor have any specially desired such inoculation.

A few hours after the inoculation there is a feeling of restlessness, slight rise in temperature, glassy look to the eyes, pains in the arms and legs of mild character. This feeling of restlessness continues, being accompanied by weakness. There is a desire to be moving all of the time but the feeling of exhaustion will not allow such movements. After ten hours the symptoms gradually decrease and no untoward effects experienced save the swelling and soreness at the point of inoculation. This soreness at the point of inoculation lasted for about ten days leaving a small nodule which disappeared in two months. The lymphatic glands were slightly enlarged in about eight hours after the inoculation and remained so for a period of three days.

This anti-plague vaccination or inoculation as it should be called was not as severe in this instance as are the symptoms which ordinarily follow the vaccination for the prevention of small-pox. It is true that neither Haffkine nor any of his fellow workers upon this subject pretend that the immunity conferred is nearly as lasting as that conferred by vaccination proper (against small-pox). What is obtained is a temporary immunity lasting over a period of danger, an immunity which can be prolonged if need be by repetition of the inoculation.



# REPORT ON THE CASES OF PNEUMONIA ADMITTED INTO THE ROYAL VICTORIA HOSPITAL DURING THE YEAR, 1900.

BY

FRED. E. TOOKE, B.A., M.D., Resident Physician.

During the year 1900 there were treated in the medical wards of the hospital 40 cases of pneumonia, 22 males and 18 females. There were in all seven deaths, or a mortality of 7.5 per cent. Of these, four were lobar and three were lobular in type. The following data are of interest.

**Etiology.** *Age*.—The average age was 30.3 years, the oldest patient being 72 years, the youngest 4 years. In decades they are as follows:—

|                                 |    |
|---------------------------------|----|
| Under ten years.. . . .         | 7  |
| Between 10 and 20 years.. . . . | 5  |
| “ 20 and 30 “ . . . . .         | 12 |
| “ 30 and 40 “ . . . . .         | 7  |
| “ 40 and 50 “ . . . . .         | 2  |
| “ 50 and 60 “ . . . . .         | 2  |
| “ 60 and 70 “ . . . . .         | 4  |
| Over 70 years.. . . .           | 1  |

*Season*.—The largest number of cases were admitted during the month of April, the smallest during the month of July. Twenty per cent. of cases were admitted during the months of December, January, and February. Forty-seven per cent. were admitted during March, April, and May. Twenty-five per cent. were admitted during June, July, and August. Eleven per cent. were admitted during September, October, and November.

*Exposure*.—In 20 per cent. of the cases there was a definite history of exposure to cold or wet immediately preceding the onset of the illness.

**Predisposing Cause.** Twenty per cent. of the patients were suffering from disease in the upper respiratory passages immediately previous to the onset of the attack.

In seven per cent. there was a history of a preceding attack of influenza.

One patient was suffering from pulmonary tuberculosis with hæmoptysis when admitted. One patient was convalescing from a recent at-

tack of empyema. One patient had recently been in the hospital with a previous attack of pneumonia.

**Onset.** *Chill*.—In 37.5 per cent. of the cases chill was the first symptom noted. The average duration of the chill was about forty minutes. In 17.5 per cent. there were chilly sensations at the onset of the disease without any definite rigor.

Pain was found present at the onset in 72.5 per cent. In nearly all cases it was in close proximity to or nearly over the pulmonary lesion. In four cases the pain was referred to the abdomen.

Vomiting occurred at an early period of the disease in 25 per cent. of the cases. Cough was present in 70 per cent., being hard and painful in 90 per cent. of these.

*Anorexia and Malaise.* Forty-seven and a-half per cent. gave a definite history of previous anorexia and malaise.

Feverishness was complained of in 22.5 per cent.

Delirium occurred at the onset in 15 per cent. of the cases. In one case the onset was gradual with malaise, anorexia and feverishness.

**Symptoms and Course.** The average duration of fever after admission to the hospital was six days. The shortest course was two days, ending by crisis. The longest uncomplicated case was eleven days, when both lower lobes posteriorly were involved.

*Part Involved*.—The lower lobes were involved in 82.5 per cent. of the cases, the upper lobes in 7.5 per cent. In three cases the upper and lower lobes were simultaneously involved.

In 57.5 per cent. the disease was present in the right lung, in 32.5 per cent. the left lung was affected, and in 10 per cent. both lungs were involved.

*Sputum*.—In 45 per cent. of the cases the sputum was tenacious and blood-stained. In sixteen cases there was no sputum, five of these were children under ten years of age.

*Cough*.—This was present in 82.5 per cent. of the cases. Of these, 75 per cent. occurred at the first day of the disease, 21 per cent. on the second day, while in 4 per cent. this feature did not present itself until the third day.

*Alimentary System*.—Anorexia was present in all cases. Constipation was present in 50 per cent. Vomiting occurred in 27 per cent. Diarrhoea occurred in two cases.

*Delirium*.—Delirium was present in 17.5 per cent. of the cases.

*Crisis*.—Of all the favourable cases, crisis occurred in 66 per cent. on the ninth day of the disease, or on the fourth day after entering the

hospital. The date of the earliest crisis was on the third day, while the latest occurred during the 12th day of illness. Pseudo-crisis occurred in 10 per cent., and termination was by lysis in 24 per cent.

**Complications.** Herpes occurred in nine cases, seven labial and two facial.

Empyema occurred in one case and was cured by operative interference.

Balanitis and phimosis was present in one case.

Acute parenchymatous nephritis was present in two cases.

Delayed resolution occurred in one case.

The disease was coincident with the following conditions:—

Pulmonary tuberculosis (1), chronic osteomyelitis (1), arterio-sclerosis and myocarditis (2), general septicæmia (1), pregnancy, fifth month, (1).

## CASE REPORTS.

BY

J. ALEX. HUTCHISON, M.D.,

Lecturer in Clinical Surgery, McGill University ; Surgeon to the Montreal General Hospital.

### **Excision of the Elbow following Traumatism.**

W. W., aged 42 years, sailor, was admitted to the Montreal General Hospital, September 19, 1900, suffering from disease of the elbow joint.

In September, 1899, patient fractured his arm at sea, and three days later was admitted to the hospital at Algiers, where his arm was put up in extension, which was followed by good union. Sometime later when at sea, the arm was again injured in the neighbourhood of the elbow joint. Iodine was used until he was admitted to hospital at Sydney, C.B., apparently suffering from synovitis and cellulitis. Multiple incisions were made, and when he was discharged there was fixation of the joint and extensive suppuration.

On admission to hospital here there were two large sinuses leading down to dead bone, and involving the joint.

*Operation.*—Langenbeck's subperiosteal method of excision was employed from which the patient made a good recovery.

*Remarks.*—Owing to the long standing suppuration, associated with ankylosis at an angle of 90 degrees, there was marked contraction of the biceps and of the neighbouring muscles. Following operation there was a firmness and control of the limb not usually seen, which I attributed to this contraction.

There was nothing unusual in the case or in the result. One lesson to be drawn from it is the importance of surgical cleanliness and of passive movement. This, in many cases, would prevent the long sickness and the necessity for extensive operative interference.

[Notes from the case report of Dr. Murray, house surgeon.]

### **Myeloid Sarcoma of the Ulna ; Excision.**

J. B., female, aged 28 years, married, was admitted to the Montreal General Hospital, January 14, 1901.

Four years ago a small, hard nodule appeared in the lower third of the left forearm towards the outer border. This has grown steadily until a few weeks ago when it increased rapidly.

Family history negative ; no history of traumatism.

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\* Read before the Montreal Medico-Chirurgical Society, February 23, 1901.



The growth has been painless, its size only causing loss of movement and inconvenience.

*Description.*—The tumour involves the lower third of the ulna with the following characteristics:—(1) The smooth, uniform outline of the mass. (2) The firm, dense nature of the growth. (3) The apparent connection with the bone. (4) The network of large superficial veins. (5) Egg-shell crackling. (6) The freedom of involvement of the radius. (7) Absence of enlarged epitrochlear or axillary glands.

*Operation.*—Under ether anaesthesia and with an Esmark bandage about the arm, two long elliptical incisions were made to include the greater portion of skin adherent to the mass. The thin, spread out muscles were separated, the bone sawn at the junction of the upper and middle thirds, and the mass tilted out. After cutting the interosseous membranes and the attachments of the flexor profundus, extensor indicis and pronator quadratus, the bone was disarticulated. The extensor carpi ulnaris tendon, passing through a canal in the mass, was divided, freed, and sutured. A mass of new growth involving the articulation was removed and found to be fibrous tissue. The separated muscles were then sutured to neighbouring muscles and the wound closed, allowing for drainage at the lower part.

*Remarks.*—The operative treatment of tumours of the long bones has undergone a radical change in the last few years. When sarcoma was suspected amputation was formerly the rule, and later, removal of the entire bone involved. In 1895, Miekulicz practised partial removal in patients who refused to submit to the more extensive operation. In a total of six cases he reports only one of the ulna. In addition to the foregoing two other cases are mentioned in *Progressive Medicine*, December, 1899.

The case I present is, I believe, the first reported in this country, and shows very little deformity or impairment of movement following so extensive a dissection.

[Notes from report of Dr. W. G. Rowley, house surgeon.]

### Pathological Report.

BY

DR. JOHN McCRAE,

Faculty Fellow in Pathology, McGill University.

The specimen as I first saw it was already preserved in formalin, and was a tumour attached to and growing from the lower end of the ulna. It was roughly egg-shaped, measured 9 cm. by 5 cm., and weighed 150 grams; was sharply defined, hard (preserved), and with a fibrous-looking coat overspreading it beneath the skin, which was in places rein-

forced by a thin coating of bony substance, continuous with the surface of the ulna itself.

On section the gross appearances were as follows:—The tumour looked firm, and yet at some places it looked brittle and granular. The tumour tissue seemed to be walled off from the shaft of the ulna by a thick bony layer and did not seem to be continuous with the bone marrow, although from its nature such must have been its origin.

On microscopic section, it is a characteristic specimen of myeloid osteosarcoma with a large number of spindle cells and round cells, the former greatly preponderating. The giant cells are very numerous, some having a diameter of 1.5 mm.; in places there are masses of dead bone, which are isolated and necrotic looking, and are surrounded by a closely packed layer of cells with large irregular nuclei; these cells lie around the bone masses exactly as osteoblasts do in bone formation, but here, from the general appearance, these isolated masses of bone are undergoing destruction in the deep parts of the tumour. It may be surmised that as the growth of the tumour has been slow and unprogressive, so its ability to destroy the original bone has been slight.

### ECTOPIC GESTATION WITH SUBSEQUENT NORMAL PREGNANCY.\*

BY

DAVID J. EVANS, M.D.,

Lecturer in Obstetrics, McGill University, Montreal.

Mrs. P., aged 24 years, consulted me in February, 1900, on account of some indefinite pelvic pain associated with rectal irritation. She gave a history of having been under treatment for pelvic disease for some two years. She had married in July, 1899, and had been operated upon by Dr. Springle in the latter part of August of that year for ectopic gestation in the right tube, which was removed. As the left ovary was found to be enlarged and cystic it was removed at the same time.

On examination, there was nothing to be found locally except some tenderness on the right side of the uterus, where several bands of adhesion could be palpated. The right ovary could be palpated and seemed quite normal. On the left side there was less tenderness but no tube or ovary could be felt. The uterus was in good position and the fundus freely movable. Her general health was good but she feared that pregnancy might at any time expose her to great danger.

Towards the end of May, 1900, she reported that her menstruation had not returned and that she thought she was pregnant. During the next four months I saw her frequently, but there was nothing unto-

ward in the course of the early pregnancy. The uterus, developed quite symmetrically, at least, no asymmetry could be made out by combined examination. With the exception of nausea and slight vomiting the course of the pregnancy was uneventful until October 1st, 1900, when she complained of severe paroxysmal pain in the right iliac region and the passage of a small quantity of blood per vaginam. Nothing abnormal could be discovered on internal examination. The patient was put to bed for a few days and small doses of opium administered. As the condition passed off in a few days, I finally came to the conclusion that the pain was caused by the rupture of some of the adhesions I had felt previously.

Labour set in on February 8, 1901, and was very rapid and easy. I only reached the patient in time to deliver her of a large, male child, which had presented in left occipito-anterior position. There was a slight laceration of the perineum which required a couple of sutures to repair. The child weighed two ounces of nine pounds.

The patient made an uneventful recovery and to-day, six weeks after delivery is in good health with the pelvic organs well involuted.

In view of the fact that some operators have proposed the removal of the second tube in cases of ectopic gestation in order to prevent the recurrence of such an accident, I think it desirable to place this case on record.

## TUBERCULOSIS CONFERENCE OF CANADA.

### ADDRESS

BY

J. D. LAFFERTY, M.D.,

President Medical Council N. W. Council.

I am much pleased to see your Excellency presiding over this influential and important conference, and to learn from your address, that you are so deeply interested in the object of the meeting, and possess such a wide and comprehensive knowledge of the subject which we are gathered here to-day from all parts of Canada to discuss; and that it is your intention to take an active interest in the work of the Association. I am sure, everyone present here to-day, feels deeply indebted to you, and is inspired with confidence, that with your countenance and valuable assistance the aims and objects of the Association so ably presented in your address, are bound to be achieved. I have been asked to speak to the first resolution, so ably and eloquently presented by Sir James Grant, which on reading over you will find, deals in a general way with the disease, and I shall endeavor in my address to support the resolution on the same lines, leaving the gentlemen who are to follow, to present to you the details of the subject under the various resolutions into which the discussion is divided.

We are face up against a problem of the most serious character, the satisfactory solution of which cannot any longer be delayed without deeply and injuriously affecting the health, wealth, and prosperity, of the people of this Dominion, the future of which is most promising, if not marred and shadowed by the ravages of this terrible disease, which is carrying off daily, monthly, and yearly, an increasing number, not only of the young, fair, and most promising of the rising generation, but also the parents, the wage-earners, the wise and experienced in every department of life, whose loss cannot be suffered, without great injury and detriment to the Commonwealth. Many of you here to-day will probably learn for the first time the alarming prevalence of this terrible disease in all parts of Canada, how rapidly and stealthily the number of its victims is increasing, and of the great and increasing mortality attending it. The death rate from tuberculosis in the Dominion, for the year 1899 as reported, was between seven and eight thousand, and for the Province of Ontario for the same year, between three thousand five hundred and four thousand. It is computed, that between one-sixth and one-seventh of the death rate in the Dominion



is the result of tuberculosis in its various forms. We are now assured by the highest medical authorities, that tuberculosis or consumption is not an hereditary disease (this assurance is now unquestioned by the profession) but is due to the introduction into the system of a germ known as the tubercle bacillus, and that the disease spreads by contagion and infection, and that though slow and insidious in its development, it is none the less surely contagious and infectious, and that it is spread by this means and by this means alone, not only from man to man, but from animals to man through the use of milk taken from cows suffering from the disease, and also probably in a less degree from the eating of insufficiently cooked meat of diseased animals.

It has been demonstrated, and this fact is well-known to you all and needs no proof from me to convince you, that the spread of contagious and infectious diseases can be practically limited and controlled by the adoption and carrying out of proper preventive measures and the observance of well-known sanitary and hygienic laws, and tuberculosis is no exception in this respect. And with the above facts clearly established and admitted by all well-informed persons, I trust you will all accept the position, as to the necessity for taking preventive measures against its spread, and agree with me, that on whomsoever the responsibility lies, to take, and put in force, the best advised ways and means to care for those suffering, and to control, as far as possible, the spread and ravages of this terrible disease. It is obligatory on them to do so and carry out this mission of duty and mercy, and if they have not the power, statutory or otherwise, it is clearly incumbent on them, to secure and fortify themselves with the necessary power and authority, on the first possible opportunity; and I further believe, that every person in this audience and every proper feeling and respectable elector and citizen in this whole Dominion, will endorse and support the action of those clothed with the necessary authority, from the highest to the lowest official, in combatting and overcoming this veritable plague, fraught with such danger and menace to the whole community. It is also well known to the profession, that the disease in its *earlier* stages, at *least*, is capable of cure, and although not as contagious in this stage as when further advanced, it is so to a certain degree, and persons suffering from it, even in this stage, are more or less a source of danger to those with whom they are in close communion, and experience and opportunity to observe results have proved that patients do better, and make more rapid progress towards recovery, when scientifically treated in homes and sanatoria erected, maintained, and specially equipped for the treatment of persons suffering from it. While a certain number of those affected may have the means to take advantage of these sanatoria or

homes, and pay for their attendance and treatment, we do know that a large number are not in a position to do so. A further condition in connection with our consumptive poor, which cannot be ignored and which makes the responsibility of the Government greater towards them, is the fact that of necessity they are poorly housed, overcrowded, poorly nourished, and surrounded by all the conditions favorable to the progress and development of the disease to a more advanced, and fatal stage; and moreover, the same conditions which exert such an unfavorable influence on this disease, make their families more susceptible and less able to resist infection, and thus favor its spread. Hence again, the responsibility of the Governments to come forward with well-directed financial aid towards the erection and maintenance of homes and sanatoria, and the necessity of these homes, and sanatoria is emphasized, when we have to deal with the disease in its more advanced stages. In the homes of sufferers, among the wealthy, well-housed, and well-to-do people, as well as among the poor and helpless, even when the greatest possible care and precautions are exercised, we cannot divest the surroundings of those suffering from being a source of more or less danger to the members of the household, if allowed any intimacy with them, and how difficult and trying it is to prevent it. Is there a husband or wife in this audience who, if their partner in life was afflicted or any of their children, and who, if by ministering to their wants, or by their presence, could alleviate or relieve their sufferings, but would do so, without for one moment considering the risk to themselves, while performing their work of love? You will more readily appreciate the danger of the presence of the disease in the homes of the rich and poor alike, when your attention is drawn to the fact of its long and lingering character, often taking years to complete its fatal work. Again we meet danger from infection in another and widespread form; many sufferers from the disease in the earlier stages, and even when the disease is well established and infection very active, have sufficient strength to move about and travel from one place to another, in the hope of getting relief from a change of climate, or from the ministrations of medical men of repute, and are admitted into hotels, boarding houses, and often into the homes of their relations and friends, who, in the latter case, have not the heart to refuse them admission. Sufferers of this class, are very numerous, and are a great danger to the public.

Incidentally I might mention here that the district where I reside, viz.: Calgary, and Alberta, on account of its favorable and well merited reputation of being an excellent climate for persons suffering from the disease, has been the resort for years of sufferers looking for relief, and the number is now so large that their presence is an urgent and press-

ing danger to the community. There are at least, from thirty to thirty-five cases, in various stages of the disease at the present time in the small city of Calgary, and a large number throughout the surrounding country, living in boarding houses, private houses, hotels, without any restraint or conditions being imposed on them, or on their manner of living or habits. It is clearly manifest, and our position, I am sure, will appeal to all fair-minded persons, that if this migration to our district continues, in justice to the safety and well being of the healthy residents, we must be given the authority to protect ourselves against this deeply unfortunate class of incomers, either to refuse them admission to our district, which would be an inhuman and drastic course, even if we were so disposed, or that provision be made for them by those on whom the responsibility lies, by the erection and maintenance of a home or sanitorium to receive and care for them.

I do not think I can more forcibly impress on you the views I have been advancing, than by using the example of an outbreak of small-pox in your midst. It will not be difficult for you to imagine, if a case of small-pox appeared, how indignant and resentful you would feel against the health authorities, if they neglected exercising their power at once to care for the case and prevent its spread, and how the whole community would rise and demand their instant action. And I am sure you would find it difficult to overlook or excuse them for any carelessness or indifference in the matter.

Now in contrast, let me refer to the attitude of the public and authorities towards the disease, tuberculosis, which, although not so quickly communicated, is just as surely and certainly spread by contagion and infection, and for every case of small-pox reported in Canada during the last twelve months, if we had a correct report, you would find hundreds of cases of tuberculosis, and while the death-rate from small-pox is as you know a very small per cent. of the case attacked, the fatality from tuberculosis, under existing conditions, is very great, the number of recoveries of those suffering being so few that, for practical comparison, we may say they are nil.

Now let me enquire: what steps have we taken, to overcome and meet the demand of this serious state of affairs? Absolutely nothing, authoritatively or officially, by Government or people, as far as I know, as to its prevention and spread.

The Ontario Government at its last session, in response to a strong appeal made to them by a large and influential deputation, nominated, by a committee, appointed at the meeting, of The Canadian Medical Association, held in Toronto in 1899 for the purpose of obtaining aid to provide homes and sanatoria for our consumptive poor, passed legis-



lation, taking power to grant \$4,000 to every institution or municipality towards the erection of a home for the treatment of the consumptive poor, and a per capita grant of \$1.50 per day for each patient while under treatment. So much and no more has been done to my knowledge as far as the Governments, federal or local are concerned.

Now as to private and philanthropic movements, as you know, certain gentlemen to whom all praise be given, erected and equipped a Sanatorium at Gravenhurst for the treatment of cases in the earlier stages of the disease offering fair chances of recovery, and I understand the result of the work done in this institution is gratifying and assuring, and justifies the statement I have already made as to the necessity of a sufficient number of these homes being provided in different parts of the Dominion, not only for those who are able to pay, but also for those unable to do so, and who in both cases if left in their own homes, have practically no chance of recovery and are a source of danger to their families and friends. To cover the requirements, these homes or sanatoria must be of two classes, viz.: first, for cases in the early stages of the disease that are capable of cure and can be favorably influenced by treatment, and secondly, homes for those advanced in the disease and incurable.

The urgency and number of sanatoria required to meet the demand, if comparative safety is to be secured, is too great to be left to the philanthropically disposed, and being in the interests of the public health and well-being of the whole people, it is clearly the incumbent duty of the various Governments to provide, or materially assist in providing, these homes or sanatoria. And in doing so, I am sure they would be enthusiastically and gratefully supported by the citizens of Canada, in making the necessary expenditure to protect and save the people from this contagious, wide-spread and most fatal of all diseases.

No doubt, in the carrying out of the necessary preventive measures, much mental suffering and anxiety would have to be endured by the afflicted, as well as by their friends; but as in all other diseases of a contagious character, where preventive measure are imposed, the few must suffer for the many.

Judging from the results already obtained from the Ontario Government, by the efforts of those who were moved by the action of the Canadian Medical Association in October, 1899, I am sanguine that greater and more far-reaching results will follow from this large and influential meeting.

Up to a few years ago, the Governments were to be excused for their inaction in this matter, but they can no longer expect indulgence for such inaction, as the educational crusade during these last few years



has, at least, placed before them the facts regarding the cause, the prevalence, and the contagious nature of the disease, and the best means of treating it and preventing its spread. There is no doubt if this movement is to be successful, we must obtain the hearty co-operation and support of the people, and to secure this we must carry on through the press, the public platform, and the publication and wide circulation of literature containing all the latest reliable information as to the non-hereditary character of the disease, the fact that it is curable in the early stages, and of the contagious and infectious nature of it, the many ways and means by which the disease may be spread, and the necessary precautions and measures to take to prevent its spread. We all know from experience that it is impossible to enforce any legislation that has not the hearty support and co-operation of the people, and we hope and believe that when a fair measure of knowledge of this disease is in the possession of the people, the greatest force and power for the prevention of its spread will be secured. To obtain this end, we ought to begin in our schools, and instruct the young as to the nature of the disease. It ought to be laid down in the curriculum of every school calendar, that instruction in this subject should be compulsory.

LECTURE ON SYPHILIS DELIVERED TO THE STUDENTS OF  
THE DENTAL COLLEGE OF THE PROVINCE OF QUEBEC,  
WEDNESDAY, 6th MARCH, 1901.

BY

A. MACKENZIE FORBES, M.D., C.M.

The study of syphilis, or syphilology, as it is called, is one of the most interesting studies which come before the student of to-day. Book after book has been written on this disease, and so much has been discussed, and is still being discussed, on this subject that I was puzzled to know, when I was first asked to deliver this lecture, what parts of our knowledge would most interest you.

I decided, however, to treat it from two standpoints. Firstly, I will discuss it with you as dental students, and will lay special stress on the manifestations of this disease most likely to be seen by you, and not only point out the dangers to yourselves when attending to the teeth of patients affected with syphilis, but the danger to the healthy individual whom you may attend immediately afterwards, if you neglect to employ the precautions necessary to disinfect both your hands and instruments.

Secondly, I wish to discuss it with you as students of dentistry as one small branch of natural science, to you as interested in everything that pertains to the welfare of the human race, and as men naturally interested in the characteristics of, and the means to combat, one of the greatest scourges of the age. Osler has stated that there are probably more families with a luetic, (syphilitic) than a tuberculous. (consumptive) taint, and I have but to add that one-fifth of the patients presented at the clinic for the Treatment of diseases of the skin at the Montreal General Hospital suffer from this disease to impress you with the importance of this subject from a scientific standpoint.

Syphilis has been defined as "a specific disease of slow evolution, propagated by inoculation, or by hereditary transmission. In the acquired form the seat of inoculation becomes the seat of a special tissue change—primary lesion. After an interval of two or three months constitutional symptoms develop, with affections of the skin and mucous membrane—secondary lesions. And, finally, after a period of three, four, or more years, granulomatous growths develop in the viscera, muscles, bones, or skin—tertiary lesions." (1)

**ETIOLOGY.** The nature of the virus is still doubtful; whether it is due to a germ, or to a chemical toxine, is not known; but the majority seem to lean to the microbic theory of its origin.

It is peculiar to man. Many have tried to inoculate it into the lower animals, but unlike tuberculosis, so far, it may be safely said without avail.

It is seen at all ages. It affects the babe unborn and the man or woman tottering on the brink of the grave. None seem to be immune. As you all know, in the vast majority, syphilitic infection is due to sexual intercourse, in other cases it is inherited, but most interesting to you will be the knowledge that it may be due to "accidental infection."

Of those cases due to sexual intercourse I need not speak. Of the cases of inherited syphilis it may be interesting to know that syphilis may be inherited: (a) from the father, (b) from the mother, (c) by placental transmission. The father may not only infect an innocent wife, and thus give birth to syphilitic offspring, but even without infecting the mother, the child developed from the syphilitic sperm (male element) may be inherently syphilitic. And here it may be worth while mentioning that a syphilitic child born of a mother presumably uninfected, through the inherent syphilis of the sperm, showing all the characteristic symptoms of this dread disease, seems to be, in the majority of cases, unable to infect the mother who bore it although suffering with the vilest and most contagious of lesions. This fact is known as Colles' Law.

A syphilitic mother is liable to bear infected children even though her disease may not have been active enough (or his resistance too great) to infect her husband.

The third means of infection *in utero* (in the mother's womb) is by placental transmission—that is, if a pregnant woman previously free from syphilitic taint acquires the disease she may infect her unborn child through the placental connection with her offspring.

The Accidental Cases, acquired otherwise than by sexual intercourse are probably the most interesting to you as students of dentistry. When you consider the amount of syphilis seen in a city like Montreal, and realize that the secretions from at least all the primary and secondary lesions (to be described later) are more or less contagious, and that the blood of all suffering from syphilis is capable of transmitting this infection, you will be surprised that this mode of infection is not more commonly reported. Osler has personally known of six medical practitioners who have been martyrs to their duty. Infected while doing their duty. I think that every medical practitioner personally knows of one or more of his friends or acquaintances, who, while attending syphilitics have been infected with a primary lesion (chancre) on his hand. I cannot recall having read of any case of this same accidental infection as occurring in a dentist, but it is quite conceivable

that such might easily occur; I will go further and state that a dentist attending to the teeth of a patient with any syphilitic lesion, and especially with mucus patches of the lips, tongue, or buccal cavity, is in imminent danger of contracting a hard chancre on his hand. Another fact that is sometimes overlooked, and this for you is important, is that it is possible to become infected by the blood of one suffering with syphilis, and by you, dentists, attending the teeth of syphilitics, who perhaps show no signs of this malady, this is a fact worth remembering, for surely, perhaps unknowingly, your fingers have been bathed in the blood of a syphilitic.

The question quite naturally arises at this point, "Why then do we almost never hear of such dentist having acquired a chancre on his finger?" and the only explanations I can offer are, firstly, that the blood of syphilitics does not seem to be so liable to carry infection as does the secretion from the cutaneous lesions, and especially those of the mucosæ; and secondly the dermis is much more likely to be intact than the mucosæ. Thus is offered a greater resistance to infection than would be offered by a surface covered with mucous membrane, such as the lips.

Consider therefore the danger to which patients who are treated by you after your treatment of the syphilitic, are exposed; and remember that your hands and instruments, unless thoroughly cleaned, can easily carry infection.

The most common of all accidental, or erratic, infection is the lip chancre, and this may be acquired in many ways outside of direct infection. Mouth and tonsillar chancres are said usually to be due to improper practices. Wet nurses are sometimes infected on the nipple, and occasionally the relatives of a child suffering from hereditary syphilis are accidentally infected.....

We have already in our definition of this disease mentioned that it has been arbitrarily divided into three stages, viz.—Primary. Secondary and Tertiary Syphilis. Let us now consider the practical points of interest of each of these stages.

(A) THE PRIMARY LESION OR CHANCRE is usually seen as a hard, indurated, sore. When extra-genital it is usually single, but those which are most interesting to the dental student are often difficult to diagnose. "Herpetiform lesions of the lips, papules on the tip of the tongue, scabby ulcerations, skin-scratches which absolutely refuse to heal—all such lesions should be regarded with suspicion if indolent in course, obstinate to treatment, and accompanied by slight discharge which has a tendency to form crusts or a pseudo-membranous deposit on the eroded surface. If, moreover, such lesions are placed upon "an elastic, sharply circum-



scribed, indurated base, and are followed by hard, painless enlargement of the nearest associated group of lymphatic glands, the diagnosis receives strong corroboration.”<sup>2</sup> “Chancre of the lip in its beginning closely simulates ordinary non-specific sores. It often begins as a chap or fissure, frequently found in the median line as an apthous lesion, an herpetiform ulceration, or an ulceration such as would be produced by the burn of a cigar or of a cigarette. In the early stages there is nothing characteristic about these lesions, but in a few days the extension of the erosion, or ulcer, and the formation of a characteristic and usually very pronounced extensive induration, indicate the nature of the affection. The whole lip is generally congested, sometimes reaches an enormous size.”<sup>3</sup> The tongue also may be the seat of a chancre, but the primary lesion of syphilis is less common on the tongue than on the lips. When found it usually involves the anterior half of the organ and is situated on the dorsal surface, the sides or the tip. It commonly assumes the erosive form, presenting an appearance almost identical with that of similar genital lesions. There is simply a painless, oval or rounded, superficial lesion with smooth surface, frequently covered by a grayish pseudo-membrane seated upon a parchment-like induration. It is often as large as a ten cent piece. The ulcerative form of lingual chancre exhibits a deep lesion often upwards of an inch in diameter, with sloping edges, and dense, well-marked induration.... If an ulceration apparently produced by carious teeth, or a papule arising without given cause, fails to heal in five or six days, and, on the contrary, enlarges, becomes elevated, is eroded, is covered with pseudo-membrane, and is not improved by applications of silver nitrate, the lesion may be looked on with great suspicion, which will deepen into almost certainty with the appearance of induration and glandular enlargement.

“Chancre of the tonsils and fauces is rare and when observed is so masked by concomitant inflammatory symptoms that diagnosis is almost impossible.”<sup>4</sup>

(B) SECONDARY LESIONS. These usually appear about six weeks after the primary sore and are often accompanied by fever, anæmia, adenitis, alopecia, neuralgia, and sometimes by iritides, visceral lesions, etc.

The most characteristic lesions of this stage are, of course, the skin affections,—those bilateral, painless, often copper-colored infections. But for the dentist the most important lesions are those of the mucosæ and especially those of the mouth and buccal cavity. Realizing their importance, and remembering the great contagiousness of most of these lesions, I will describe at some length their characteristics, in many instances quoting almost *verbatim* the description of White and Martin.

The mucous-membrane manifestations of syphilis correspond, in pa-

thology and general features, with those appearing on the skin, the difference depending on increased vascularity, diminished resistance to extension and ulceration on the part of the surrounding macerated mucous membrane, and a greater or less degree of irritation incident to secretions which are constantly brought in contact with the lesions.

The lesions of syphilis which affect the mucosæ during the secondary stage of the disease are best classified thus :—

(1) Erythematous Syphilide. These lesions first appear as discrete spots; these become confluent in a few hours, exhibiting then a somewhat sharply circumscribed circinate margin. The mucous membrane of the throat is most frequently attacked, the patient suffering from syphilitic angina which may assume the acute, or the chronic, form. The hyperæmia and œdema involve the pharynx, tonsils, arches and soft palate though the latter may exhibit discrete macules. So quickly does the macular eruption of the mucous membrane become confluent that, when first observed, the lesions depending upon their location closely simulate simple sore throat. The discharge from these lesions is said to be contagious.

(2) Papular Syphilide. (Mucous Patch).

(a) The Papular Erosion is in the form of oval or rounded, infiltrated patches, exhibiting a raw ham colour, denuded of epithelial covering and showing a smooth, glistening surface. It is usually placed on the dorsum of the tongue and associated with it are found fissures of the borders of the organ. It is particularly common in inveterate smokers and hard drinkers.

(b) The Diphtheroid Papule. The commonest form of the mucous patch appears as a small, or large, discrete, or confluent, papule covered with a tightly adherent, gray-white pseudo-membrane, which, on being removed leaves a bleeding surface. This form of mucous patch is generally found on the mucous membrane of the cheeks and lips and at the angles of the mouth, where it becomes fissured, on the sides, under surface, and frænum of the tongue, on the gums, and on the soft palate, pillars arches and tonsils. The lesions may be attended with fissuring, with superficial ulceration and when situated on the tonsils, with deep and destructive ulceration. When the mucous patch is undergoing involution either under the influence of constitutional, or local, treatment, or spontaneously, and loses its diphtheroid covering, it presents the appearance of a papular erosion.

(3) The Vegetating Papule is comparatively rare, and exhibits the tendency towards local hypertrophy which is sometimes a marked feature of syphilitic lesions, and there results a raised lesion which is in

reality an infiltrated papilloma, varying in size from a split-pea to a half-walnut.

(4) The Papulo-Squamous Syphilide. Mucous Psoriasis. Scaly Patches rarely appear in the course of constitutional syphilis. They are rounded or irregularly shaped, flat, smooth, bluish-white patches, such as would result from lightly brushing a surface with strong silver nitrate solution. From the confluence of such patches curious markings are sometimes observed on the tongue.

This finishes the description of the Secondary Lesions which will likely come under your notice as dentists, and brings us now to the consideration of.

(C) TERTIARY SYPHILIS. The origin of the lesions which come under this heading is, even now, much disputed. Many hold that these lesions which are usually localized tissue hypertrophies (gummata) are due to a post-syphilitic degeneration of the tissues, while the majority still cling to the theory that they are due to the same causation as are the earlier manifestations; but before describing the lesions of what is commonly described as tertiary syphilis, which you will most likely meet with in your daily practice, let me briefly state that these differ from secondary lesions in that they tend to be unilateral; and from both by the fact that the secretions from tertiary lesions are certainly far less contagious than those of either of the other two stages of syphilis. The most common lesions of this stage are skin eruptions, gummata growths in the viscera, and amyloid degenerations.

The lesions characteristic of the so-called tertiary syphilitic state when affecting the skin usually show, as I have already stated, a far greater tendency to ulceration and destruction of the deeper layers of the skin with a tendency to leave scars, than is shown by the earlier manifestations of this disease.

The most characteristic lesion of this stage, however, is the localized tissue hypertrophy of which I have already spoken, and which are commonly known as gummata. These may develop in the skin, subcutaneous tissue, muscles or internal organs, and it is these alone that you are likely to meet with in your professional capacity. These quite frequently will be met with in the mucosa or deeper structures of the tongue, hard, and soft, palate, and other structures which are continually before you, and will present themselves both in the form of diffuse infiltrations, and circumscribed tumors with the common characteristic of always tending to break down and form ulcers, often having a serpiginous formation. They are most commonly responsible for the enormous loss of substance quite frequently seen in the palate.

There is now left to us but one form of syphilis which I will briefly



describe before dealing with those general considerations of this disease which will be more interesting to you as practicing dentists. I speak of congenital syphilis.

**CONGENITAL SYPHILIS.** Not every one born of a syphilitic parent, or parents, necessarily shows signs of syphilization at birth. It is noteworthy that the result of the marriage of a syphilitic which is followed by conception is usually, at first, abortion or miscarriage; later, offspring characteristically syphilized, are born who probably live but a few hours or days; and later still come those who show signs of the disease, yet whose resistance is strong enough, or whose infection is mild enough, for them to recover from the early symptoms and grow up perhaps showing no sign of a characteristic or noteworthy nature till puberty; others again, who growing up always present one or more of those lesions so suspicious of the syphilitic heritage—I speak of the peculiarly-shaped head with its square forehead, the flat, sunken, nose, the osteites, iritides, keratitides, and, what to you will be most interesting, those teeth which bear the name of him who first described them, the greatest of English syphilographers, Jonathan Hutchison.

**THE GENERAL DIAGNOSIS OF SYPHILIS.** There is seldom any doubt as to the diagnosis of this disease, except in those cases where there has been a primary sore without subsequent secondary symptoms, or where the primary sore has not been noticed, and the secondary lesions have been few, and not characteristic.

**PROPHYLAXIS.** Let me quote, almost verbatim, from Osler. “Irregular intercourse has existed from the beginning of recorded history, and unless man’s nature wholly changes—and of this we can have no hope—will continue. Resisting all attempts at solution, the social evil remains the great blot on our civilization, and inextricably blended with it is the question of the prevention of syphilis. Besides personal purity, which physicians are bound to advocate, there is another measure for the prevention of the disease which we must consider, viz,—rigid and systematic regulation of prostitution. The state accepts the responsibility of guarding citizens against small-pox or cholera, but in dealing with syphilis the problem has been too complex, and has hitherto baffled solution. On the one hand inspection, segregation and regulation are difficult if not impossible to carry out; on the other hand, public sentiment, in Anglo-Saxon communities, at least, is as yet bitterly opposed to this plan. While this feeling, though unreasonable, as I think, is entitled to consideration, the choice lies between two evils—licensing, even imperfectly carried out, or wide-spread disease and misery.

If the offender bore the cross alone, I would say forbear; but the physician behind the scenes knows that in countless instances syphilis



has wrought havoc amongst innocent mothers and helpless infants, often entailing life long suffering."

It is for them he advocates protective measures.

**TREATMENT.** Syphilis is, perhaps, of all diseases the one whose symptoms are greatly amenable to treatment. Great relief may be afforded the patient, and protection offered the public.

**MARRIAGE.** With reference to the marriage of one who has suffered from syphilis, although it is generally allowed that if two full years have elapsed since the date of infection marriage may be allowed, it is certainly advantageous to delay this for a much longer period. But here the words of Hutchison will be of interest, "It has long been my practice to permit and even to encourage marriage, when two full years have elapsed from the date of contagion."

As regards the ultimate prognosis. One who has suffered from syphilis even though he has had careful and prolonged treatment can never be said to be as certain of good health—yes, I may even say, as certain of life, as he who has escaped this scourge.

In closing, gentlemen, I beg to mention that it has been my desire not only to accentuate, and impress you with the characteristics of those lesions which you as practitioners of dental science will often meet with, but to give you a general knowledge of a disease which it is our fondest hope may some day be numbered, as one of the past, while believing that by the diffusion of the knowledge of the disease, its dangers, and its prophylactic treatment, the protection of the innocent will be furthered, as will be hastened the dawn of that day when the dangers of syphilis will be almost annihilated by the legislation of a paternal government as the representatives of an enlightened people.

#### REFERENCES.

1. William Osler's Practice of Medicine.
- 2, 3 and 4. White and Martin, Genito-Urinary Surgeon and Venereal Diseases..

# RETROSPECT OF CURRENT LITERATURE.

## Medicine.

UNDER THE CHARGE OF JAMES STEWART.

### **Value of Tuberculin in Determining the Condition of Tuberculous Joint Lesions.**

FRAZIER AND BIGGS. "The Value of the Tuberculin Test in the Recognition of Latency or Quiescence in Tuberculosis of the Bones and Joints." *University of Pennsylvania Medical Bulletin*, March, 1901.

Although the applications of the test reported upon by these observers were made in surgical cases, yet the use of tuberculin is of such importance in all departments of medicine that a *resumé* of this article may well be allowed here.

The investigation was undertaken with the object of determining solely whether tuberculin could be employed to advantage as a means of determining whether, when the disease has apparently run its course and subsided, the process is in a state of quiescence, of latency, or whether resolution with total disappearance of all tuberculous material has occurred.

The technique adopted in this investigation was practically that which obtains in the application of the tuberculin test in the human subject. The tuberculin was obtained from the laboratory of the State Live Stock Sanitary Board of Pennsylvania prepared under Dr. Ravenel. The amount of tuberculin varied according to the age of the patient and the reaction of the initial dose, which was .001 gram. In the event of no reaction from the initial dose, .003 grams. were used, and so on. Two days usually elapsed between the injections. The time of injection varied from 8 a.m. to 8 p.m., usually, however, at 11 a.m. or at 1 p.m.

*The Reaction.*—The effects were carefully studied and were both constitutional and local; the former may be compared to the symptoms of grippe, while the latter, often variable in degree, consist essentially of the increased vascularization of the tubercle, and of degenerative changes in the cells surrounding the bacilli. The local lesion is usually small and of short duration, when considerable constitutional disturbance results. One does not find, therefore, what one might suppose,

viz., a constitutional reaction in proportion to the local lesion. "In advanced cases the general reaction is slight and the local reaction is marked, while in the incipient cases the reverse is true." What constitutes a reaction is a point upon which opinions differ. These authors, along with many others, regard an elevation of the temperature to three degrees above normal as a reaction, whether or not it is accompanied by other phenomena.

Thirty-one patients were subjected to the tuberculin test. They were divided as follows:—(1) Fourteen classified as "recovered." (2) Three cases were classed "quiescent." (3) Five were classed as "active." (4) Nine were classed "miscellaneous." With but four exceptions in the first three classes, coxalgia and spinal caries were the diseases suffered from.

*General Observations.*—A slight irritation at the point of injection of the tuberculin, lasting for three or four days, was observed, always without suppuration, the deeper injections usually being followed by more marked irritation. The constitutional effects in but three cases made the patients distinctly uncomfortable. The elevation of the temperature, where a positive reaction was obtained, depended upon the amount of tuberculin administered. *There was no uniform variation in the degree of reaction obtained from injections given during different hours of the day.* The highest point in the reaction was usually reached in twenty-two hours, the return to normal after the temperature began to decline being made in twenty-three hours. A sharp rise followed by a sudden drop to normal was seen in a few cases. There was observed a tendency towards subnormal temperature after reaction to the test. There were no subjective or objective symptoms indicating that the condition of the lesion of active or former disease was affected by the tuberculin, and so far as could be ascertained on careful investigation, the patient did not sustain any injurious effects.

The positive reactions in the first three classes averaged 86 per cent., being in class 1, "recovered cases," 75 per cent.; 2, "quiescent cases," 100 per cent.; class 3, "active cases," 80 per cent.; while class 4, the "miscellaneous cases" reacted in 70 per cent. of the total. The longest period after injection before the highest temperature was reached was thirty-two hours, the shortest six hours. The longest duration of fever after the maximum was reached was forty-five hours, the shortest duration was three hours. A few examinations were made upon the blood of several of the cases. No changes to any degree were found in the red cells. The leucocytes showed a tendency to increase about five hours after injection.

*Conclusions.*—The authors wish this communication to be regarded in the light of a preliminary report, and direct special attention to the

positive reactions in the various classes already described. In those cases, let it be understood, where for periods varying from one to seven years there had been no clinical evidence of active tuberculosis, the reaction appeared with the same relative frequency as those in which there was every reason to believe the tuberculous process was active. Some of these patients had been operated upon and the affected area of bone removed. They ask what is the interpretation of the figures with which we are confronted. It is not (1) the unreliability of the test, it might be (2) misinterpretation of clinical phenomena, for where tuberculous disease had been known to exist and had been operated upon there yet might remain some portions of tissue in which the bacilli of tuberculosis were at present dormant, and (3) in these subjects there may yet exist other tuberculous foci.

### Enteroptosis.

ARNEILL. "Enteroptosis." *Amer. Jour. of the Med. Sciences*, April, 1901.

Arneill remarks that his experience has convinced him that this is a remarkably common disease. He analysed eighty such cases, sixty-nine of which were found in women and eleven in men. In twenty-four cases both kidneys were dislocated, the right usually greater than the left. In thirty-three cases the right kidney alone was dislocated.

Concerning Stille's phenomenon of the floating tenth rib, Dr. Arneill states that only lately has he been paying attention to it. In eight cases the tenth ribs were distinctly floating. This, however, gives not relativeness of proportion, as the great majority of the patients were not examined for the sign. The stomach was displaced downward in sixty-nine instances, in twenty-eight of these this organ was found below the naval. A few showed dilatation.

The stomach contents analysed in forty-eight cases showed but slight evidences of altered acidity; the results were those of normal findings in the great majority of cases; rarely was the acidity above 70. The blood condition in twenty-three cases examined showed hæmoglobin below 70 in ten instances and above that percentage in thirteen.

Neither child-bearing nor tight-lacing appeared to have been an etiological factor in these cases, and a congenital predisposition is believed to exist in many. The symptoms were of that varied type common to this condition and recently so frequently described.

The author fails to suggest anything very new in the treatment. Many cases have been remarkably improved under the use of tincture of nux vomica. It is recommended to give it in doses of ten to fifteen drops (U. S. Ph.) before each meal, and increase one drop daily until as high as seventy or eighty drops are taken, and to combine with over-feeding.



## Gynaecology.

UNDER THE CHARGE OF WILLIAM GARDNER.

### Carcinoma of the Female Genitalia.

OLIVER THOS. M., M.D., F.R.C.P. "A Clinical Lecture on Malignant Disease of the Female Genitalia." *Brit. Med. Jour.*, Jan. 19, 1901.

*Vulva.* The form of malignant disease infecting the vulva is usually either epithelioma or sarcoma. It occurs as an ulceration, or, when seen early, as reddish, flat, elevated and circumscribed nodules, which tend to infect by contact the parts touching them. An irritating discharge, often having an unpleasant odour, is frequently observed exuding from them.

They are to be distinguished from, (a) caruncle of the urethra, by the caruncle being situated within the meatus urinarius and by its being soft, bright red, and exquisitely tender; (b) hard chancre, which is followed by the typical rash; and (c) soft venereal sore, which has no hard indurated base or edges, and is accompanied by a tendency to the formation of buboes.

The prognosis is bad even after extensive removal.

*Vagina.* Here the disease may be primary but is usually secondary. When primary, it is seen on either the anterior or posterior wall of the vagina and has the characteristics of epithelioma. It is most often caused by irritation, as by a pessary.

The symptoms are hæmorrhage, pain, especially on locomotion or intercourse, and an offensive discharge.

The prognosis is bad, as, on account of its being situated in soft tissue, it rapidly spreads.

*Uterus.* The cause of carcinoma is still *sub judice*, but Mr. D'Arcy Power's experiments seem to indicate irritation of the epithelial cells as a pre-requisite. The disease is primarily a local one, "as shown by the success which follows early removal."

Unfortunately there is no one symptom which is pathognomonic. The earliest and most characteristic sign is either bleeding or a thin watery discharge, which may be offensive. This latter is especially liable to be present when the patient is beyond the climacteric. The

hæmorrhage may only follow coitus, or the periods may gradually become increased in length. Where hæmorrhage appears after the climacteric, it is almost always due to carcinoma; and where a local examination is made and no disease found, the uterine cavity should be explored by the curette, which will bring away soft, gray, cheesy material, if malignant disease is present.

Early removal of a uterus which is the seat of a carcinoma which has not invaded the surrounding parts to too great an extent, cannot be too strongly urged. When this cannot be done the patient may be made much more comfortable by thoroughly curretting away all the diseased tissue and then applying a strong solution of chloride of zinc. The duration of the disease varies from six to eighteen months, but patients usually die within one year from the time of its discovery.

### Ovarian Pregnancy.

ANNING and LITTLEWOOD. "Ovarian Pregnancy." *British Med. Jour.*, Jan. 12, 1901.

Drs. Anning and Littlewood reported before the Obstetrical Society of London an undoubted case of this rare form of ectopic gestation, the possibility of the existence of which has long been denied by most observers.

The patient was 28 years of age and had never been pregnant before. Rupture had occurred about thirty-six hours before operation, and a quantity of blood clot was removed from the abdominal cavity. A small ovum about the size of a Barcelona nut was found. This fitted into an envelope composed of laminated blood clot; and the sac containing the ovum exactly corresponded to a cavity which existed in the right ovary, it having escaped through a rent. The right tube was removed and showed no signs of rupture, nor did the left, which was examined and allowed to remain *in situ*.

The specimen was shown with microscopical sections of the ovum, the sac, and a portion of the ovarian wall.

In the discussion which followed, Bland Sutton remarked that a careful examination of specimens reported as ovarian pregnancy showed that they were in many cases nothing but small dermoids or else a lithopædion in the broad ligament. Dr. Farre had concluded, that while a spermatozoon could enter an ovarian follicle, ovarian pregnancy did not exist, but this specimen proved that it could take place. He also stated that he had recently gone to Amsterdam where he had seen and examined an undoubted case.

### **Hysterectomy for Carcinoma.**

BOLD, H. J., M.D. "Vaginal versus Abdominal Hysterectomy for Cancer of the Uterus." *Amer. Gyn. and Obstet. Jour.*, Dec., 1901.

Neither method is suitable for all cases, although the German and some American operators think that if it is classified according to its liability to affect the neighbouring parts, uterine carcinoma may be divided into that affecting the infra-vaginal portion of the cervix, that affecting the supra-vaginal portion, and lastly, cancer of the fundus, the disease spreading to the vaginal mucosa and the parametrium, respectively, for the first two forms. ;

The disease spreads by the lymphatics to a great extent, the blood vessels only becoming infected later on in the disease, and the glands are only infected when the cancer has been present for some time, numerous post-mortem examinations having shown glandular involvement in only about fifty per cent. of the cases.

Vaginal hysterectomy takes time and involves a smaller peritoneal opening than the abdominal route; convalescence is more rapid; the direct mortality is smaller; and the unpleasantness of a wound in the anterior abdominal wall is obviated. To be highly successful, however, one must cut as wide of the uterus as possible. The only advantage of the abdominal route over the vaginal is that by it the lymphatics of the pelvis can be better seen and removed.

"The only cases in which the abdominal operation is indicated with my present views, are those in which the uterus is too large or too adherent from inflammatory processes to be removed per vaginam without marcellation, and those where the diagnosis of glandular enlargement is made."

### **Nocturnal Incontinence of Urine.**

NOBLE, GEORGE H., M.D. "Seventeen Years of Nocturnal Incontinence of Urine Cured by Operation." *Amer. Gyn. and Obstet. Jour.*, Feb., 1901.

The patient in whom this condition was observed was an overgrown girl of seventeen. During the day she could control the function but at night was unable to do so. The cause was hard to discover, as she was not of a neurotic temperament, and there was neither constipation nor rectal irritation. The interior of the bladder was examined and found to be normal. The only local abnormality about the external genitalia was a thickened and inflamed annular hymen, which was intimately connected with the urethral meatus, upon which it was thought to have considerable influence. For this reason it was decided to operate.

The hymen was divided to its base on each side of the urethra. A circular incision was made around the meatus and the urethra, together with the adjacent part of the hymen, was dissected free of its attachments for some distance, thus dividing all nervous connection between it and the hymen. Two sutures fastened this latter to the pelvic arch, by which means the urethra was supported in place.

For some time after the operation the patient was wakened every two hours during the night to empty her bladder. The intervals were gradually lengthened, until she was enabled to remain all night without voiding her urine, and she is now and has for some time been perfectly well.

*F. A. L. Lockhart.*



## Ophthalmology.

UNDER THE CHARGE OF F. BULLER.

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### Syphilis.

VICTOR KLINGMÜLLER. "The present Status of Syphilis Therapy."  
*Klinische Monatsblätter f. Augenheilkunde, December, 1900.*

Klingmüller, the first assistant in Neisser's clinic in Breslau, has written a very interesting résumé of the present therapy of syphilis. Neisser, Lang, Lesser, and others, hold that syphilis is due to a form of bacterium, the syphilis bacterium, and that the secondary and tertiary symptoms are due to outbreaks of bacterial activity, not to the toxins evolved by the bacteria.

Syphilis is a chronic disease and the treatment must be essentially chronic in character. Mercury is a specific for these syphilitic processes, and hence should be used in all stages of the disease. The iodine salts are merely eliminants of the products of the bacterial action.

The treatment should be conducted in courses, at intervals spread over four years or more, without at any period awaiting the outbreak of special symptoms calling for treatment. Neisser prefers inunction treatment alternately with subcutaneous injections, the inunction being preferable in winter and the injections in summer. Treatment is started with energetic inunction of one drachm of blue ointment, repeated thirty or thirty-five times, or else by ten injections. Internal administration of mercury is avoided if possible, mainly on account of the disturbing action on the intestinal tract. One has to be on the lookout for a mercurial idiosyncrasy, which is most frequently found in alcoholics and anæmic individuals. One has to be careful if there is a tuberculous dyscrasia, and the minimum dose has to be followed out in these cases.

From a series of investigations conducted in Neisser's clinic and elsewhere, it would seem that in the inunction treatment the main absorption of the mercury is by the lungs, only comparatively little mercury being absorbed through the skin. The great point in favour of inunction is that the amount absorbed into the system can be readily governed, and the appearance of unpleasant symptoms avoided. The chief drawback is the occurrence of a mercurial dermatitis.

As to the subcutaneous injections, two forms of mercurial salts are used, the soluble and insoluble. The soluble salts, the cyanate of mer-

cury, oxycyanate, and sublimate, are rapidly absorbed, and hence have to be injected daily; whereas the insoluble salts form, as it were, a subcutaneous deposit, from which there is a slow, continuous absorption, and the injections are accordingly made only every four or five days. The insoluble salts used are:—Salicylate of mercury, which is the mildest in action; then follows the thymol-acetate of calomel, a little stronger; and finally the yellow oxide, which is the strongest.

As to the iodine treatment, the iodides of potassium, sodium, or rubidium, preferably in large doses, are used mainly in the tertiary stage. Neisser uses iodipin, an oily, 10 to 20 per cent. compound of iodine. It is administered in capsules by the mouth, but preferably subcutaneously in the gluteal region, dosage being 20 cc. for ten days, or on every second or third day. It does not cause iodism and is safe, energetic, and lasting. The iodine appears in the urine and sputum in from two to five days, and can be detected for weeks after.

#### **Iodine for Corneal Ulcers.**

FRIEDENWALD. "Treatment of Dendritic Keratitis and Marginal Ulcer of Cornea with Tincture of Iodine." *Am. Jour. of Ophthal.*, July, 1900.

Having cocaineised the eye and instilled fluorescein to delimit the ulcer, Friedenwald freely swabs tincture of iodine over the ulcer and rubs it well into all infiltrated edges. It is never necessary to repeat it more than once. The eye is bandaged, after applying an antiseptic ointment, and but little pain follows.

#### **Ophthalmic Migraine.**

NENSTÄTTER. (Munich). "Validol in Scotoma Scintillans." *Die Ophthal. Klinik*, June 20th, 1900.

Nenstätter administers twenty drop doses of validol at onset, and after a few minutes the symptoms suddenly disappear not to recur. It was rarely necessary to give a second dose. The validol is taken on a lump of sugar.

#### **Development of Colour Perception in the Child.**

WARD HOLDEN and K. K. BOSSE. *Archives of Ophthal.*, May, 1900.

The results of a series of investigations by these two gentlemen are very interesting. Before the age of six months, definite results were not obtained, but precocious infants of six months and average ones of seven or eight months, showed a marked reaction to red, orange or yellow, but not marked as regards green, blue, or violet. At nine months there was a sluggish reaction to green, blue, and violet, and at eleven and twelve months a prompt reaction to all colours. The colours at the

red end of the spectrum are thus reacted to sooner than those at the violet end.

A further investigation as to the preference for colours at different ages, from seven months to thirteen years, showed that as the psychical development advanced and the mental processes dominated the earlier physiological actions, there was at first indifference to all colours, succeeded a little later by a dislike to the more exciting reds and yellows, and a preference for the less exciting colours of the violet end of the spectrum.

### **Connection between Ocular and Dental Affections.**

DESPAGNET (Paris). *Recueil d'Ophthalmologie, July, 1900.*

As the eyes and teeth are anatomically so intimately connected, it is apparent that pathologically there should be a close connection. The same periosteum which lines the orbital cavity extends to the alveolar border of the upper jaw; the mucous membrane of the mouth is in direct continuity with the conjunctiva. The roots of the teeth extend often into the antrum of Highmore, and disease extends from here into the orbit. The angular artery and certain veins run almost directly from one region to the other. There is the same nervous supply from the fifth nerve and the sympathetic.

Despagnet holds that amblyopia, amaurosis, keratitis, corneal ulcers, conjunctivitis, strabismus, cycloplegia, etc., have occasionally been clearly traced to dental causes. Generally the teeth of the upper jaw are at fault, but sometimes those of the lower jaw.

### **Optic Atrophy Due to Mumps.**

DOR (Lyons). "Post-Neuritic Optic Atrophy due to Mumps." *La Clinique Ophthalm, August 25th, 1900.*

Ocular disturbances following mumps have been reported and are generally complaints of foggy vision, but in a few cases optic atrophy has been observed. Dor's case was a military man with optic neuritis, which went on to partial atrophy despite energetic treatment. The vision finally was limited to the counting of fingers at a few feet. Dor considers the optic neuritis as due to toxæmia.

### **Ocular Hysteria.**

KOENIG (Paris). "Hysterical Ocular Syndromes." *Recueil d'Ophthalmologie, July, 1900.*

Hysteria may simulate any disease of the ocular apparatus. Hysterical amblyopia generally appears as concentric contraction of the fields. Hysterical amaurosis is often difficult to distinguish from the true form, as in both the onset may be sudden and amaurosis, due to

disease of the two occipital lobes, often begins with symmetrical scotomata in the form of horizontal or vertical hemianopsia. Hysterical amblyopia is often associated with spasm of the lids. Hysterical amaurosis gives the patient but little trouble and, moreover, the amaurotic eye is blind only when monocular vision is attempted, or is shown by prism tests. In hysterical blindness the patient sees without being aware of it. Reversal of the fields for colour is common.

Hysterical ptosis is due to spasm of the orbicularis, the eyebrow is drawn down; whereas in true paralytic ptosis the eyebrow is elevated. False ptosis may be accompanied by paralysis of the members of the opposite side of the body. No case of hysterical paralysis of the ocular muscles has been reported, the disease being of the nature of a contraction or spasm. The external recti muscles are always affected, one only may be involved, when the internal rectus of the other eye may also be troubled. The external rectus may be in a condition of associated spasm with the orbicularis. All the extrinsic muscles may yield to the disease.

Hysterical nystagmus is characterised by rapid oscillations, separated by short intervals of repose. The oscillations increase when the patient's attention is drawn to them, and they may be banished by suggestion.

Mydriasis and myosis have been observed. The pupil generally reacts to light, but sometimes does not. The nature of associated symptoms are of importance in the diagnosis.

### **Retrobulbar Neuritis.**

SANTOS FERNANDEZ. "Amblyopia due to lack of proper nutrition."

*La Clin. Ophthal.*, August 25th, 1900.

INOUE (Japan). "Toxic Amblyopia due to Santonin." *Die Ophthalm.*

*Klinik*, Aug. 20th, 1900.

Fernandez noticed many typical cases among the unfortunate, half-starved reconcentrados in Cuba. A complete or partial cure resulted on their return home, when plenty of good food was obtained.

Inoue's case was a man, 33 years old, who took santonin on retiring. The next morning everything looked yellow, which lasted three days, and on disappearing left behind a central amblyopia in the right eye. The patient was ordered salicylate of soda. Six weeks later all unpleasant symptoms had disappeared. Inoue considered the later condition as retrobulbar neuritis due to santonin.

*J. W. Stirling.*



## Obstetrics.

UNDER THE CHARGE OF WILLIAM GARDNER.

### Symphysiotomy.

CARR, WILLIAM P.—“The objections to Symphysiotomy and How to Overcome them.” *The Amer. Jour. of Obstetrics*, Oct., 1900.

Of late little has been written of the operation of symphysiotomy in America. Dr. Carr seems to be a firm advocate of the operation in suitable cases. He believes that the tedious and painful convalescence, which has been the rule in these cases, can be avoided by proper care in the selection of cases for operation, and by the employment of a proper technique.

While not considering pelvimetry useless, he questions its accuracy and prefers to depend upon a digital examination and the knowledge to be gained by a careful use of the forceps. He prefers to apply the forceps to the head, which is then drawn down to the brim where it is held, while a finger is swept around its circumference. He considers that in this way a better idea can be obtained of its relative size in comparison to the pelvis than can be obtained in any other way.

To avoid dangers, he prefers the open operation, the skin wound being made as far above the vulva as possible. The wound can then be drawn down by means of a retractor and the joint laid bare. He strongly objects to the subcutaneous method suggested by Ayers on account of the dangers of laceration and hæmorrhage.

In order to avoid hæmorrhage, he prefers to carefully dissect away the tissues behind the joint for three-quarters of an inch on either side with a blunt director and the finger. A long narrow gauze sponge is then placed behind the joint before it is opened.

Carr always employs silver wire to suture the bones together. In this way he avoids the use of adhesive plaster and the tight abdominal and hip binder. The advantage he claims is that the patient can then turn about in bed and her convalescence is shortened considerably, as in his experience the bones have always firmly united by the end of three weeks.

### Symphysiotomy on Occipito-Posterior Cases.

FRY, HENRY D. “An Indication for Symphysiotomy with Report of a Case.” *The Amer. Jour. of Obstetrics*, Oct., 1900.

In occipito-posterior positions when normal rotation has failed, and where moderate traction with the forceps applied to the child's head

does not succeed, the author of this paper considers that symphysiotomy is the next alternative.

He prefers the Ayer's operation on account of the ease and simplicity with which the joints can be separated by this method. He then reports a case where symphysiotomy was performed, the Ayer's method being employed. The joint was opened without difficulty. Very little hæmorrhage occurred during the operation or after delivery. The bones were held in place after the child had been delivered by means of a broad band of adhesive plaster placed tightly around the pelvis, and this was reinforced by a firm binder. A retention catheter was left in position. The patient made an uneventful recovery, being kept in bed for three weeks. On leaving the hospital examination showed fibrous union of the joint.

In conclusion, he gives his opinion that in cases of unrotated occipito-posterior positions of the head, symphysiotomy is indicated in preference to forcible extraction with forceps or version.

#### **Treatment of Occipito-posterior Positions.**

BRODHEAD, GEO. L. "The Treatment of Persistent Occipito-Posterior Positions of the Vertex." *Amer. Jour. of Obstetrics*, Dec., 1900.

In an interesting paper read before the New York Obstetrical Society, Dr. Brodhead advocates the instrumental rotation of the occiput forward in suitable cases of persistent occipito-posterior positions of the vertex.

He divides the cases into three classes in considering the treatment. (1) Cases in which the vertex is above the brim. (2) Those cases in which the vertex is engaged in the brim or occupies the pelvic cavity. (3) Cases in which the vertex has reached the outlet and is pressing upon the perineum.

In the first class he considers the choice of treatment lies between forceps and internal podalic version, the choice of operation depending upon the skill and experience of the physician. The foetal mortality is higher with version than with forceps rightly used. Version is a safer operation for the mother. He considers on the whole that forceps in posterior, as well as in anterior positions above the brim, will give better results than version, as far as the child is concerned, and results equally as good for the mother.

In the second class of cases he considers the proper treatment is the restoration of flexion by pressure on the sinciput from below. If further assistance is indicated the forceps is to be used; if the vertex is merely engaged, a pelvic application of the forceps should be employed; if the vertex is in the cavity the blades should be applied to the child's head. Rotation of the occiput forward is to be favoured by traction forward in the axis of the pelvic cavity.

In the third class of cases where the occiput remains persistently posterior at the outlet, he contends that it is desirable and indeed necessary, in the best interests of the mother and child, to bring about forward rotation of the occiput, which can best be done by the use of forceps. Before the rotation is undertaken the following conditions must be fulfilled:—The head must be well flexed as possible; the vertex should be well down in the pelvis and preferably at the vulvar outlet; the membranes should be ruptured; the cervix as dilated as dilatable; and the diagnosis of position positive.

To perform the rotation he prefers the Tucker solid-bladed forceps, for the reasons that they are more easily introduced, more easily applied to the sides of the child's head, are removed with greater ease, and mark the child less than any others. The patient being in the dorsal position the blades are applied to the sides of the child's head with the concavity of the pelvic curve looking forward. The fingers of one hand are kept in contact with the sagittal suture, to note whether the head rotates with the forceps. The handles are then seized with the other hand and a firm grasp of the head secured, then during a pain the head is rotated from a posterior to an anterior position. Before rotating the head, the handles should be carried well over towards the thigh of the patient towards which the pelvic curve of the blades is directed. In rotating the handles are carried downward and backward. When the concavity of the pelvic curve of the forceps passes the lateral wall of the pelvis, the head will have been rotated into a transverse position, where it is held until several contractions and relaxations of the uterus have taken place, during which time the shoulders and body rotate and become adapted to the position of the head. The operation is then completed by further rotating the handles backwards and downwards, so as to bring the occiput into the oblique anterior position, where it is held for several contractions. The blades are then removed and the rest of the delivery left to the natural forces, though as a rule it is better to reapply the blades in the usual manner and deliver the child.

The operation should be done easily. If force is necessary to bring about rotation, it should not be attempted, but delivery should be completed with the occiput posterior.

The paper closes with the report of eight cases operated on by the author, who employed this method to effect delivery of the child.

In the discussion which followed the reading of the paper, the general opinion seemed to be that the method described by Dr. Brodhead had proved satisfactory, as several speakers had employed the forceps in rotation with the greatest success. Some expressed the opinion that the axis-traction forceps applied to the child's head had rendered rotation easier than when the ordinary forceps were used.

**Indentations in the Skulls of the New-Born.**

MUNRO-KERR, J. M. "Spoon-shaped Indentations in the Skull of the New-Born." *Brit. Med. Jour.*, Jan., 19, 1901.

A new method of treatment is suggested in this paper, by which the spoon-shaped indentations not infrequently met with in the skulls of the new-born, can be relieved without operation.

The method suggested consists in the application of firm pressure, exerted by compressing the child's head in the antero-posterior diameter between the hands. The authors reports three cases where this simple method succeeded in removing the deformity. In each case on the application of pressure in the antero-posterior diameter of the head, "the depression came out, producing a sound as when a dent in a felt hat is removed." He has tried the effect of compression in artificially induced depressions in still-born infants, and in every case where he could produce such depression, he found it could be removed by compression applied in the antero-posterior diameter of the head.

*D. J. Evans.*



## Reviews and Notices of Books.

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✓ A TEXT-BOOK OF PRACTICAL OBSTETRICS. By EGBERT H. GRANDIN, M.D., Gynæcologist to the Columbus Hospital, etc., and GEORGE W. JARMAN, M.D., Gynæcologist to the Cancer Hospital, New York, etc. Third Edition, Revised and Enlarged. F. A. Davis Company, Philadelphia, New York and Chicago, 1901.

That this work has gone into its third edition since its first appearance in 1896 is evidence of its value and popularity. The third edition has been enlarged by the addition of a chapter dealing with the anatomy of the female organs of generation and with embryology. In our opinion this chapter fails to add anything to the practical value of the book as the subjects are presented in a sketchy outline and merely serve to confuse instead of adding to the reader's knowledge.

The book has been reviewed in these columns before, and the opinion there expressed as to its value to the practitioner and student as a valuable guide to practical obstetrics, still holds.

D. J. E.

✓ OBSTETRIC CLINIC. By DENSLOW LEWIS, Ph.C., M.D., Professor of Gynæcology in the Chicago Polyclinic, etc., etc. Octavo, pp. 640. E. H. Colgrove, Chicago, 1901.

Professor Denslow Lewis has published in book form the stenographic reports of thirty-nine clinical lectures which he has delivered in Cook County Hospital since 1887. No attempt at a systematic and orderly arrangement of the subject matter has been made, but the author discusses the management of obstetric cases and their complications in a style which shows wide reading, careful thought and extensive observation.

Medico-sociologic topics such as the regulation of prostitution, criminal abortion, infanticide, and the restriction of venereal diseases, are touched upon. The author's remarks on these subjects are most interesting and instructive, and give evidence of considerable reading and investigation.

We must take exception to his remarks in Lecture 14, in which he recommends the employment of a prophylactic douche of bichloride solution in all cases of labour. Chloroform anæsthesia he employs in all cases and states that "there never has been a death from chloroform when administered judiciously to a healthy parturient woman."

He considers that at present we have but vague ideas of the etiological relationship of the staphylococci to puerperal infection, and that therefore not much is to be expected from the employment of anti-toxines in these cases. He places chief reliance on local and constitutional treatment, but suggests that if possible when immediate amelioration does not take place, the injection of 20 cc. of anti-streptococcic serum in doses of 5 cc. will never do harm, and very often will be of decided benefit.

The publisher's work leaves much to be desired as the paper is poor and the illustrations worse. The book will be useful chiefly to obstetric teachers as affording many valuable suggestions.

*D. J. E.*

## Society Proceedings.

### MONTREAL MEDICO-CHIRURGICAL SOCIETY.

*Stated Meeting, February 22, 1901.*

JAMES PERRIGO, M.D., PRESIDENT, IN THE CHAIR.

#### **Excision of the Elbow and Myeloid Sarcoma of the Ulna.**

DR. J. ALEX. HUTCHISON showed a patient on whom he had performed an excision of the elbow with a very satisfactory result. The full report will be found at page 267. Dr. Hutchison also exhibited a sarcoma of the ulna which he had removed, and Dr. McCrae demonstrated the specimen. For the report see page 268.

#### **Gall Stones.**

DR. JAMES BELL exhibited a collection of gall stones numbering 3,367. There were two distinct kinds of stones, 8 or 10 large faceted stones found in the neck of the gall bladder and the remainder much smaller in size. This led to the inference that the smaller ones were of later formation. The stones were removed by operation from a woman 58 years of age, who gave a history of illness beginning in 1899. Since Christmas, 1900, she had had attacks of colic about every second day. At the operation about four ounces of pus was found in the gall bladder, then came the small stones, and in the neck of the bladder the large stones were found.

DR. SHEPHERD had removed as many as 600 stones from one case. He referred also to a case which had come under notice in the dissecting room, a woman who had evidently not died from any trouble in connection with the gall bladder, yet on opening up the bladder the contained stones filled a skull cap.

### OTTAWA MEDICAL SOCIETY.

The Society met in St. Luke's Hospital on Friday, March 15, 1901, Dr. J. L. Chabot, President, in the chair.

DR. PREVOST reported a case of *Atrophic Scirrhus of the Breast* of four years duration, in an unmarried woman of 52 years of age, two years past the menopause. The breast was shrunken to the size of a silver dollar, and there was one enlarged gland in the axilla. Although in favour of leaving such cases alone, he had consented to operate at the patient's earnest wish.

Discussion followed as to the merits of operation and expectancy in atrophic cases.

DR. COUSENS showed a *Tubercular Testis* removed from a patient aged forty years, from whom the other had to be taken nine months previ-

ously. He also reported a case of fulminating recurrent *Appendicitis* following a severe attack of grippe. The prognosis was serious.

### **Hernia.**

DR. COUSENS read a paper on this subject, reporting six cases of operation during the year. These consisted of one femoral, one umbilical (fatal owing to faecal fistula and exhaustion after apparent healing of the wound), and four inguinal.

After reviewing the history of the operation from the time of Celsus, Dr. Cousens discussed the modern methods, of which he recommended that of Bassini. It was best to use strong and slowly absorbable sutures, and to use no method that might interfere with the primary and strong union of the wound.

Discussion followed, most speakers preferring the method of Bassini and several advising the use of a truss for some months after recovery. The possibility of reduction of old standing irreducible hernia in the aged by repeated massage and taxis was urged and cases cited in point. In one such reduction was accomplished after taxis had been used night and morning for a month.

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The Society met at Water Street Hospital on Friday, March 22, 1901, Dr. J. L. Chabot, President, in the chair.

### **Fracture Dislocation of the Dorsal Vertebrae.**

DR. KIRLEY reported a case of fracture dislocation between the tenth and eleventh dorsal vertebrae in which operation was declined, and the case treated by extension, manipulation, and plaster for six weeks, followed by a corset for a week.

Three months later the patient can walk well with slight spastic gait and is able for some work. There is a marked projection of the spine at the site of fracture.

### **Case Reports.**

DR. GIBSON reported a case of *Dropsy and Copious Albuminuria* without tube casts in a puerperal woman, in which lactate of strontium appeared to have had much to do with a rapid recovery. Fifteen grains four times daily were given.

DR. CHABOT reported a case of *Appendicitis* in which operation was postponed at first owing to symptoms of right pneumonia with hæmoptysis. At the operation, a week later, the sigmoid was found on the right of the sacrum, and the cæcum and appendix high up under the liver. Double pneumonia followed the operation and death ensued.

DR. A. T. SHILLINGTON reported three cases of *Imperforate Anus in the New-born*. One died in thirteen days and another in five days after refusing operation. The last was operated on and recovered.

DR. VALADE also reported resuscitation of a case of *Asphyxia Neonatorum* by prolonged rhythmic traction on the tongue.



T H E

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

EDITED BY

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WILLIAM GARDNER,  
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W. W. CHIPMAN.

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## HIGH SCHOOL METHODS.

The work accomplished in our public schools would naturally be a matter of some interest to all those members of the community who are called upon to pay school-taxes, but may justly be regarded as of vital importance to the parents who not only contribute to the support of the schools but also look to these institutions as the main factor in fitting their children to become intelligent and useful men and women.

Our High Schools of course occupy the first rank in this respect and as public institutions are a fair mark for friendly criticism.

That an efficient mental training adds greatly to the intelligence and possible usefulness of the individual is a postulate which everyone may safely accept, and if this were all, the high schools would undoubtedly fulfil their functions to the satisfaction of all concerned, but there are unfortunately other considerations in regard to which the present system of instruction signally fails. The tendency to cram pupils with a multitude of studies to the detriment of their physical development must be patent to all who have given the subject serious thought and in this we see a serious defect which urgently calls for reform. A child who grows up with a weak constitution and an overwrought nervous

system cannot be expected to develop into a healthy and useful man or woman.

The pre-requisites for normal and healthy physical development are (1) Fresh air, (2) good food taken at proper intervals, and (3) the avoidance of excessive strain, either mental or physical. In regard to the first of these we may admit there is, in our Montreal High School, not much amiss except that the hours in school are more than should be and thus somewhat curtail the opportunity for out-door amusement, which should form a considerable element in the life of every growing person. As for the second it may be said that the school hours, for some classes at least, are such that the children cannot possibly take their mid-day meal, the most important one of all, at anything like the proper time. For example:—the girls in the classes ranging from 12 to 16 years of age, in order to be at school on time, must breakfast about eight or half-past eight o'clock. About twelve o'clock, a short time before the act of digestion is completed, there is 30 minutes recess, during which it is found necessary to give them a sort of luncheon, this because they are kept in their classes until two or sometimes half-past two o'clock, which means their mid-day meal is not taken until 2.30 or 3 p.m., and this again before the digestive organs have had a proper rest. The same fault is again committed at the evening meal three or four hours later. Could anything be more unreasonable, more at variance with the physiology of digestion? It is amazing that parents continue to put up with such an atrocious arrangement. Ask any intelligent physician if he does not think it a wrong that young girls at an age which demands the greatest care in all matters relating to their physical welfare should be subjected to regulations which are of a character so utterly unhygienic and positively harmful in their effects.

The third pre-requisite confronts the combined wisdom of the High School authorities with a cry for reform no less strenuous than that of the second.

First, with regard to the order of their lessons. If children became fatigued as older persons do by continuous application, it would seem obvious that they should not be set to do their most difficult work towards the end of long school hours; on the contrary, the most difficult subjects should as far as possible be gotten through in the forenoon. How does it stand with the unfortunate class of young girls already alluded to? It is this way:—they take their arithmetic, their most difficult study, about the last thing, at the end of a weary four or five hours; and so it is all through, the time-table is arranged without a due regard to the physical and mental necessities of the pupils. If all the children were likely to have the same aims and objects in life there might be

some sense in putting them through exactly the same course of training. If all were being fitted to go through a University or a Normal School after their High School course, it might be thought essential that they all follow the same hard and fast curriculum of studies, including as it does some 12 or 14 different subjects, but since the vast majority have no such intentions, and many wish to pursue certain subjects through outside tuition, why should there not be a compulsory course including certain essential subjects and making others such as science, geography, music and drawing optional, and taken towards the end of the school hours? This would allow probably more than half the class to get out at 12.30 or 1 o'clock, to their great advantage in shortening the school hours and giving them time for more out-door amusement or for private tuition in music and perhaps other subjects that can be better taught outside the school room.

Let us hope that the additional year recently added to the course will not be utilized in adding further burdens to our young people, of whom already too much book work is exacted, but that it will be made the means of materially shortening the school hours and so doing away with the existing defects which we believe are the cause of much more injury to the pupils than their teachers are aware of, to say nothing of the annoyance and inconvenience the continuous five hour attendance in school carries into their home lives.

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Yale Medical School is to have a new building to cost \$100,000, the gift of an anonymous donor.

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Dr. Henry Jellet has been appointed editor of the *Medical Press and Circular* rendered vacant by the death of Dr. Jacob. Dr. Foy will be assistant editor.

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At the Pan-American Exposition to be held in Buffalo this year, there is to be a fully equipped hospital on the grounds under the directorship of Dr. Roswell Park.

The Society of Italian Agriculturists has awarded the Golden Crown, bestowed upon those who have deserved well of agriculture, upon Prof. Giambattista Grassi for the valuable services which he has rendered agriculture by his investigations in malaria.

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Dr. A. N. Worthington, McGill '86, Surgeon-Major of the Second Canadian Mounted Rifles, and Dr. C. B. Keenan, McGill, '97, of the Strathcona Horse, are mentioned for meritorious service in South Africa by Lord Roberts in a recently issued report.

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King Edward has made Sir William Henry Broadbent, M.D., a Knight Commander of the Royal Victorian Order, and Dr. A. R. Manley, who has been for many years surgeon-apothecary to the Prince of Wales, a member of the fourth class of the same order.

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The State Senate of Minnesota has passed a bill prohibiting the marriage of insane, epileptic and idiotic persons, and requiring a medical certificate for all applicants for marriage licenses. The marriage of any feeble-minded person over forty-five is permitted by the bill.

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A bill has been introduced and is expected to become law in the State of New York to compel all persons professing to practice hypnotic treatment to take out a license. The passage of a successful examination after four years of study will be the qualification for the license.

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On Friday, April 5th, the New York Academy of Medicine celebrated the fiftieth anniversary of Dr. Abraham Jacobi's graduation in medicine. A large number of physicians assembled to congratulate Dr. Jacobi on the attainment of his jubilee and it was a cause for gladness to all that his mental and bodily powers are as yet unabated. The address delivered by the guest of the evening was entitled "German Text-Books Half a Century Ago: History and Reminiscences," published in the *New York Medical Journal* of April 13th, makes most interesting reading at the opening of the new century.

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A crusade against promiscuous expectoration in public buildings and street cars has been instituted in New York. A number of inspectors were told to watch for invasions of the law and arrested a goodly number of offenders, many of whom are said to have looked upon their arrest as a joke until fined for indulging their filthy and indecent habit. It is to be regretted that the regulations of the Montreal Street Railway against spitting in the cars are not better enforced. Many of the conductors on lines where the majority of their passengers are not in sym-

pathy with such, to them, unnecessary refinements, entirely ignore the rule, although it is posted conspicuously in every car.

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As a consequence of the recent wholesale poisoning in Great Britain by arsenic contamination in beer, a bill has passed its second reading in the House of Commons, on which the *Lancet* makes the following comments. "Put shortly the bill is intended to enable the consumer to know what he is not drinking. Beer is divided into two classes, somewhat on the logical process of dichotomy—namely, malt beer and part malt beer. Malt beer means that which is brewed from barley, malt, yeast, hops and water. Part malt beer does not mean this. These are admirable provisions in our mind and we would fain see them extended to all classes of food. Substitutes are generally harmless and often palatable, but the consumer should know what he is getting. If, for instance, he likes to use cotton-seed oil for a salad, let him do so, but he should not have cotton-seed oil palmed off upon him under the impression that he is buying olive oil."

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S. H. Monell, M.D., chairman on the committee on standards of the Roentgen Society, in order to standardize the methods of x-ray work, has invited experts to send to him their suggestions on something over a score of points. Included among these are:—Standard x-ray examination table, adjustable for all parts of the body; method of posturing each part of the body for a standard picture; means of fixing parts immovably during a standard exposure; complete definition of what a "standard exposure" should be (of medico-legal value); standard landmarks to be pictured in the negative as inherent proof that a standard exposure was made (a medico-legal necessity); standard technique for picturing correct relations of bones and joints, technique for picturing contrast for diagnosis of soft parts; standard technique for picturing the different calculi, vesical and renal, and gall stones, etc., and standard technique for therapeutic administration of x-rays with proper precautions.

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The first meeting of the Canadian Medical Association in the new century will take place at Winnipeg on August 28, 29, 30, and 31, 1901. From present prospects it will be most successful both in point of numbers and in scientific work.

Large numbers of physicians from the East are arranging their holiday trip so as to be present at the meeting, the opportunity afforded by the railways of a cheap trip through to the coast adding much to the attractiveness of the meeting.

The Address in Medicine will be delivered by Dr. J. R. Jones of



Winnipeg and the one in Surgery by Mr. O. M. Jones, F.R.C.S.Eng., of Vancouver. An evening will be devoted to a discussion on Tuberculosis and another to some surgical topic.

By way of entertainment an excursion to Fort Garry, and on Saturday, August 31st, a trip to Brandon, with a luncheon, returning through Southern Manitoba, have been already arranged.

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The Faculty of Medicine of McGill University has recommended to the Corporation and Matriculation Board of the University that a considerable increase in the standard of general education for admission to the study of medicine, be enforced in the session of 1902-03. The requirements for the present matriculation are:—

(1) Latin, including Latin prose, sight translation, grammar and a knowledge of two or three texts, Cæsar and Virgil being required for the coming session.

(2) Mathematics, arithmetic, algebra, including quadratic equations, Euclid, books 1, 2 and 3.

(3) English, a knowledge of one or two English classics, a sound knowledge of English grammar, composition, and dictation.

(4) And one of the following optional subjects:—Greek, French, German, or Science (Chemistry and Physics).

After 1902 the requirements of English, Latin and mathematics will remain the same, but in addition to that Science, viz., the elements of chemistry and physics, will be made compulsory, and the candidate will be required in addition to take one of the following languages—French, German or Greek.

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It is announced that the Second Annual Meeting of the American Congress of Tuberculosis will be held at the Grand Central Palace, in the city of New York, on the 15th and 16th days of May, 1901, in joint session with the Medico-Legal Society of New York. It is proposed to open a Museum of pathology, bacteriology and public health, with an exposition of electrical and other instruments; with the use of the power furnished at the building, which it is intended to be made most complete, educating and attractive; of all appliances used in any way in arrest or treatment of the disease.

The medical profession of all countries will be invited to contribute papers to be read before this Congress, in their behalf by a committee selected for that purpose, in case of the inability of the author to attend, and to enable those who could not hope or expect to be present, to participate in the work and usefulness of the body. As the questions to be discussed involve remedial legislation, legislators, lawyers,

judges, and all publicists, who take an interest in the subject, are also invited, both to enroll and contribute papers.

The papers should be forwarded to the Secretary on or before the 15th day of April next, and the title of the papers forthwith, to facilitate classification, as the time is short. The enrolling fee will be \$3, entitling the member to the Bulletin of the Transactions free.

The complete list of officers and committees will be announced as early as possible. The preliminary announcement is now made to obtain the names of those who will co-operate in the Congress, and an early classification of the subjects and titles.

Proceedings of the McGill Medical Society of  
Undergraduates.

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THE ETIOLOGY AND GENERAL TREATMENT OF SKIN  
DISEASES.

BY

W. L. TAYLOR, '01.

The subject which I have chosen for this evening is so vast, that I cannot hope, within the limits of a paper of this nature, to give more than a brief outline, but I hope I may be able to bring to your notice some points which may be of interest, and possibly of use to you.

Diseases of the skin have been known from time immemorial, but it is only within the last few years that they have been studied with care and system, so that, for this reason, as they have become better known, and treated in a systematic manner, the prognosis is much better than it was formerly.

Diseases of the skin are produced by a variety of causes. A great number are secondary to morbid changes and functional disorders in other organs and tissues, but many are the result of processes affecting the skin alone. The former are termed symptomatic, or sympathetic affections, and are illustrated by urticaria, erythema nodosum and various exanthemata. The latter are termed idiopathic diseases, and may be produced by either internal or external causes. They are typically represented by the erythemas of heat and cold, and various local hypertrophies. The relation between the skin and other organs of the body, is so intimate however, that the distinction between these two classes cannot always be made.

In some cases the local causes predominate, while in others, the constitutional changes are the most important. A proper appreciation of the etiological value of each can be obtained only by a comprehensive review of the origin and development of the eruption. The causes concerned in the production of diseases of the skin may be conveniently divided into predisposing and exciting.

**Predisposing Causes** are those which produce certain alterations or conditions of the general system, or the cutaneous surface, by which the individual liability to the development of certain diseases is increased. They do not produce disease, but render liability to it greater. The

most important predisposing causes of cutaneous diseases are age, sex, diathesis, occupation, seasons, climate, plethora, debility and heredity.

*Age.*—Many cutaneous diseases occur only during certain periods of life. Thus, ichthyosis, congenital syphiloderma, etc., appear at birth, or within a short time afterwards. Erythema, urticaria, and eczema capitis are frequently observed during dentition. Acne, psoriasis, etc., rarely appear before the age of puberty. Carcinoma, etc., and nearly all cases of pruritus, are affections of advanced life.

*Sex.*—Some cutaneous diseases occur more frequently or exclusively in the male sex, while others are more often observed in the female. For instance:—Chloasma and lupus occur more frequently in women, epithelioma and herpes in men.

*Diathesis.*—Many diseases of the skin can be traced to a diathesis, for example, psoriasis, erythema nodosum, etc., to a gouty or rheumatic diathesis. Persons of a lymphatic temperament are liable to recurrent attacks of impetigo, pustular acne and eczema. Lupus and scrofuloderma are common in those of a strumous diathesis.

*Occupation.*—Various occupations are prolific predisposing causes of cutaneous diseases. Blacksmiths, brick-layers and firemen frequently suffer from erythema and dermatitis. Fissured eczema of the hands from the use of strong soap is often observed among washerwomen. Confectioners are liable to a form of onychia produced by the action of sugar, acids and heat. Eczema occurs in grocers and sugar warehousemen from handling raw sugar. Butchers, tanners and wool sorters are liable to ecthyma and anthrax.

*Seasons.*—Many cutaneous diseases are affected by particular seasons of the year. Erythema multiforme and furuncles are more frequent in the spring and autumn months. Pruritus is usually most severe in winter. Eczema and psoriasis have been frequently observed to disappear in summer, only to re-appear with the first week of cold weather.

*Climate.*—The influence exerted by climate is analogous to that of the various seasons. Some diseases are peculiar to cold climates, others to temperate, and still others almost exclusively are limited to tropical regions.

The relative dryness or humidity of the atmosphere is also an important factor, and the clothing, diet, hygiene and habits of the people in the different climates must also be taken into consideration as exercising more or less influence upon the origin and progress of the prevalent disease.

*Plethora.*—Plethoric patients are peculiarly liable to be attacked by a superficial inflammation of the skin. Erythema, eczema, etc., develop in them upon the slightest cause and in many cases prove rebellious to treatment.



*Debility* is an essential predisposing cause of a number of skin diseases. Furuncles and carbuncles are more severe in the debilitated than in the robust.

*Heredity* exercises an important influence in the production of many skin diseases. The peculiar liability of some persons to be attacked by a variety of cutaneous diseases while enjoying good health in every other respect, can be most satisfactorily explained by the supposition that they inherited a weak or susceptible skin. Among the diseases directly transmitted from parents to children are, scrofula, syphilis, leprosy and ichthyosis. Psoriasis and eczema frequently appear to be hereditary also.

**Exciting Causes** are those which directly or indirectly produce the disease. They may be divided into internal and external.

*Internal Exciting Causes* are those which act from within the body. They are varied and numerous and at times are so obscure as to escape recognition.

They may be seated in the affected portion of the surface, but more often they are to be found in disorders of distant organs and tissues, or in some derangements of the general system. The most prominent of the internal causes of skin diseases are the systemic disturbances produced by pregnancy, dentition, vaccination and certain medicinal substances; dietetic errors, neurotic disturbances, constitutional diseases and disorders of internal organs.

*Pregnancy.*—Many women suffer during the latter months of pregnancy from eczema or pruritus, for which no other cause can be observed than the physiological alterations in the blood and other tissues. Patches of chloasma are also often developed at the same time. The treatment in these cases should be merely palliative in character, as all the symptoms usually disappear spontaneously as soon as the pregnancy is ended. It is a curious fact that psoriasis and other chronic affections frequently disappear during pregnancy, or are lessened in extent and severity.

*Lactation* also exerts considerable influence on the progress of psoriasis, eczema, acne, and other disorders of the sebaceous glands. In some cases, these affections are aggravated by lactation, but in the great majority of cases, marked improvement is noticed.

*Dentition.*—The systemic irritation produced by dentition is frequently the only observable cause of urticaria, eczema capitis, etc., but its importance must not be exaggerated. Investigation will often result in the discovery of other and more important disorders.

*Vaccination* is occasionally followed by the appearance of extensive erythematous or inflammatory eruptions. They are usually benign in

character and disappear in a few days. Sometimes, however, owing to the use of impure lymph, or to the depraved state of the patient's constitution, deep seated erysipelatous inflammation may be developed and run a tedious course which is difficult to cure.

*Medicines.*—Various cutaneous disorders have been observed to follow the use of certain medicinal substances. It is well known that an obstinate form of acne is produced by the prolonged administration of either the bromides or iodides of potassium. Antipyrine, copaiba, cubeb and santonine often give rise to an urticarial eruption, while turpentine, belladonna, etc., sometimes produce an erythema resembling the eruption of scarlet fever.

*Dieletic Errors.*—A great number of cutaneous diseases are produced by errors of diet, either by the food habitually taken being too rich and highly seasoned, or too poor in quality to furnish adequate nourishment for the tissues. Many persons have an idiosyncrasy for special articles of food. Urticaria is often produced by fish, oysters or strawberries. Pruritus, erythema and eczema are known to be due to a diet of oatmeal or buckwheat.

*Neurotic Disturbances* are the principal factors in the production of many skin diseases. In some cases the morbid process is seated in the central nervous system, in others, it involves only the peripheral terminations of the nerves of the affected part. Among the principal affections which are due to disturbances of innervation are urticaria, herpes, pruritus and a number of hypertrophies, atrophies and new formations. As indicative of this nervous origin, Mr. Jonathan Hutchinson points to the corymbiform or branched disposition of the lesions, as corresponding to the distribution of cutaneous nerve fibres. Moreover, a neurotic affection does not propagate itself by direct extension or infection or adjacent parts, and the malady develops itself fully in the first instance.

From the same cause the glands and the appendages of the skin may become diseased. Grayness or baldness, and loss or deformity of the nails, not infrequently depend upon lesion of some portion of the nervous system. Functional nervous disorders, reflex excitation, and strong emotion, often occasion eruptions upon the skin.

*Constitutional Diseases.*—Next to be mentioned as having an etiological significance in skin diseases are constitutional diseases. Among those which produce cutaneous disorders are pyæmia, scrofula, syphilis, scurvy and the various exanthemata.

*Functional and organic disturbances* of internal organs are the exciting causes of a number of cutaneous eruptions. Derangements of the alimentary canal are the most frequent causes of all cutaneous diseases

of an erythematous or inflammatory type and should be invariably sought for and relieved.

Pruritus and eczema of the lower extremities are frequently due to cardiac degeneration or valvular disease. Acne, eczema and urticaria are often dependent upon some genito-urinary disorder. Hutchinson says acne is caused by genito-urinary trouble in 90 per cent. of the cases and disappears when it is removed.

Uridrosis is the result of complete suppression of the urinary secretion.

**The External Exciting Causes** of disease of the skin are those which act from without the body. They are varied and numerous. The most important are improper clothing, extremes of heat and cold, mechanical and chemical irritation, personal habits, parasites and contagion.

*Improper Clothing* is a common cause of cutaneous diseases. Erythema, eczema, pruritus, etc., are often developed and perpetuated by the use of flannel under-clothing. Coloured stockings, dyed with impure or irritating materials often produce severe and extensive cutaneous inflammations. Dr. J. Leslie Foley, in a paper read before the Medico-Chirurgical Society of Montreal, has enumerated a number of modes by which skin diseases are excited by the clothing.

Silk underwear may disturb or excite the electricity of the skin and has been known to set up a dermatitis. Tight garters may cause varicose veins, chilblains, etc.

According to Hutchinson, the irritation of new woollen underclothes may bring out an eruption upon the trunk of a syphilitic subject. A non-specific eruption resembling syphilis may be produced by a like cause. Hence the necessity of being on one's guard against errors in making an examination of a suspected case. The receptivity of various kinds of underwear for micro-organisms has also been investigated. These bodies reach the underwear by means of particles of dust, and are caught in the interstices of the cloth, or adhere to its surfaces. The looser the material, the more readily are the microbes retained. Smooth and finely woven linen and cotton materials retain fewer organisms and can be most thoroughly cleansed by boiling. Under ordinary circumstances the germs do not develop and multiply in the clothing.

*Heat and Cold* are also important factors in the production of cutaneous disease. Exposure to intense heat—whether artificial or that of the sun—is a frequent cause of erythema, eczema, dermatitis, etc. Exposure to cold often results in a variety of fissured eczema, commonly known as “chapping of the hands.” If the cold be more intense, it may be followed by chilblains or death of the exposed part.

*Mechanical and Chemical Irritants.*—Many cutaneous diseases are the



result of mechanical irritation. Tight shoes and stockings produce corns and various excoriations and ulcerations of the feet. Extensive erythemas and eczemas are sometimes caused by ill-fitting clothing.

Various callosities and other hypertrophies are developed in carpenters, stonecutters and other artisans by the pressure and friction to which certain portions of the integument are subjected during working hours. Chemical irritation is a more frequent and more serious cause of cutaneous disorders. The use of the arsenical and depilatories often causes severe inflammations.

Artificial flower-makers, manufacturers of wall paper and workers in acids, alkalies and other chemicals are subject to various eruptions which are due to the irritating action of these materials on the skin. Severe cutaneous inflammations may also be caused by the incautious application of any of the ordinary rubefacients or epispastics or by contact with various poisonous plants. Eruptions may also result from the external use of arnica or the sulphur and mercurial preparations.

*Personal Habits* are important factors. Acne and eczema are often the result of alcoholic indulgence. Acne may also be due to excessive smoking.

Personal uncleanness is also a cause of cutaneous disease in some cases, but, on the other hand, too much attention may be given to cleanliness and the skin injured by the too frequent use of strong soaps.

*Parasites.*—A number of skin diseases are produced by animal and vegetable parasites. The hair and nails also suffer from their ravages. Numerous microbes are constantly present upon the general surface. Of these some are incapable of thriving upon the human skin, others are pathogenic under favorable conditions. When the proper conditions are lacking they are unable to multiply and remain innocuous.

*Contagion* is a prolific source of cutaneous disease. Smallpox, measles, scarlet fever, etc., are frequently communicated by direct contact.

Many of the cutaneous lesions of syphilis are contagious, likewise the parasitic diseases, but some are more readily transmitted than others.

Individual susceptibility is an important factor in the propagation of all diseases of this nature; some persons are readily affected by the poisonous germs or spores, while others may be exposed to them with impunity. Many diseases of the skin are brought to this country by immigrants, as they are readily contracted on shipboard. To prevent the spread of these so far as possible, the persons and clothing should be scrupulously cleansed upon arrival.

With this rough sketch of the etiology of cutaneous diseases, I will now say a few words on the treatment. In the short space at my dis-



posal, it will be impossible for me to give more than a brief *résumé*. The methods tried are legion, some have been proved to be of no value, and so have been discarded, while others still remain. The adaptation of the proper treatment to diseases of the skin requires, on the part of the physician, a thorough knowledge of general medicine. The previous history, including any idiosyncrasies which the patient may have the present condition, the nature of the affection and its cause if apparent, should all be looked into from the standpoint of general medicine and rational deductions drawn from these considerations as to the proper method of treatment. As a rule, the deductions after careful inquiry into all the circumstances just briefly recounted, will lead the physician in the majority of cases to employ both constitutional and local remedies. The most decided, rapid, and certain results are generally obtained from constitutional treatment, which assists frequently the action of topical remedies which may be employed.

In some affections it alone may be demanded, or simple local treatment will suffice, while still in others it becomes necessary to employ both at the same time. Again, constitutional and local in conjunction may be necessary at one stage of the disease and should only be used singly at another. Also, the remedy or remedies employed, whether for systemic or local action, may be proper at one period and useless or harmful at another. Great care must therefore be exercised to be able to know from a general knowledge of medicine, just what to do at the proper time.

**Constitutional Treatment.**—The general health should be examined and if deranged in the least, should be corrected by suitable constitutional treatment.

The principal means employed may be briefly referred to as follows:

*Hygiene.*—The observance of the commonly accepted hygienic laws in diseases of the skin is all important, especially after the eruption is developed, or has become chronic. Most essential measures are ventilation and bathing. The latter is contra-indicated in some acute affections, while in those of a sub-acute or chronic nature, has very good effects.

Rest and exercise are important, the former being beneficial in the beginning of some inflammatory diseases and the latter in the later stages, or in chronic forms. Outdoor exercise should be taken if possible, or, if not, passive exercise, or massage may be resorted to. Climate has an undoubted influence on the health of the skin, and a change is often beneficial.

*Diet.*—Attention to diet is often more beneficial than the administration of remedies. Each case requires to be carefully looked into by the

physician, and the amount and the character of the food regulated as may seem suitable. The beneficial effect of an appropriate and regulated diet upon diseases of the skin, is not always justly appreciated. Unless the general health is obviously impaired, close inquiry concerning the state of the digestive functions is apt to be neglected.

In diseases of the skin, alimentation is indeed but another mode of medication. The mineral substances contained in foods are identical with those demanded for the composition of the blood and tissues. As far as they are absorbed from the food, to that extent are drugs to be regarded as merely supplementary.

Cod-liver oil acts both as a food and a valuable remedy in disease of the skin. It is the remedy above all to employ in those cases in which the health has become affected through faulty assimilation, as in eczema, syphilis, etc., it is also serviceable in many chronic forms of skin diseases. If the oil cannot be retained or assimilated in the stomach, it may be given hypodermatically. Dr. Shoemaker has proved its absorption and assimilation when administered in this manner. Phosphorus is of value in cutaneous diseases depending on nerve debility. It is also prepared as the syrup of lactophosphate of lime and other combinations. These preparations are especially useful in eczema of children depending upon malnutrition, and in boils, carbuncles, etc. Iron and its preparations are indicated in all skin eruptions, as eczema, syphilis, scrofula, etc., which are due to a depraved state of the system. Many cutaneous affections due to anæmia and chlorosis are favorably influenced by iron. Iron may be advantageously combined with strychnine, arsenic, quinine, etc., or administered in the form of a chalybeate water. Quinine is a valuable remedy owing to its action upon various inflammatory diseases of the skin. In variola, scarlatina and typhoid fever it can be used with advantage in reducing excessive fever. It is an appropriate remedy to employ in diseases arising from malaria or from an impoverished state of the system. Arsenic is useful in some affections of the skin, and useless in others. It is also valuable in some stages of eruption and absolutely injurious in others. The disease as well as the stage of the eruption must be carefully considered before it is employed. It is especially beneficial in diseases involving the epidermis. Administered for its effect upon the skin, the action of arsenic is usually slow, often requiring sometime before a given result is obtained. When an impression has resulted from its use, it should be continued, but in smaller doses, for a time after all symptoms of the eruption have vanished. It is contraindicated in the inflammatory or acute stage of all eruptions, and if employed then, may be followed by injurious effects from its stimulating action on the

epidermis. In other words, it should not be used in active cell proliferation, but during the stage of decline, or chronic period of eruption, in which the affection is situated in the superficial portion of the skin.

Some persons have an idiosyncrasy for arsenic, being quickly and easily affected by small doses. Prof. Jas. Stewart reports a case of erythema multiforme after the sixth dose of arsenic. In another case which he had, wart-like excrescences formed upon the dorsal surfaces of the hands and fingers, in these, the deeper layers of the skin were affected and the arsenical course had been continued for some time. Some people also will not tolerate its internal administration. If arsenic is not tolerated by the stomach, the same physiological and therapeutic effects may be obtained by administering it hypodermically. This fact was fully demonstrated by Dr. C. B. Radcliffe in 1866. Since that time the method has been used and commended in various parts of the world. It is, however, to be regretted that this method is so little used by physicians. It is to be regarded as being the best manner for producing a speedy, powerful and effective impression upon the diseased skin. The arsenic is not altered or lessened in its action and consequently its therapeutic effects are produced to the fullest degree.

This method is especially adapted to the treatment of obstinate cases of psoriasis and eczema. It will spare the digestive organs and will abridge very much the duration of treatment. The physician should bear in mind the fact that in exceptional cases arsenic gives rise to certain cutaneous manifestations. A brown pigmentation occasionally develops in consequence of an arsenical course. It may appear on any portion of the body, may exist in patches, or, may be so generalized as to resemble Addison's disease. This pigmentation gradually disappears after the remedy has been suspended. Recently Mr. Jonathan Hutchinson has attempted to prove that arsenic may if continued for years, bring about a cancer of the skin. The cases which he narrated as sustaining this statement were few in number and were far from conclusive in the evidence they presented of the truth of this assertion. It is, however, the bounden duty of everyone who prescribes this agent, to bear in mind the possibility of its being able to induce epithelial cancer.

Mercury is an effective antiphlogistic agent. In small doses, it improves the quality of the blood, especially increasing the red corpuscles. By this action, it forms a powerful agent for combating and treating syphilis, for which it is chiefly used. It may also be employed in the treatment of inflammatory affections of the skin, as eczema, lupus, scrofula, psoriasis, etc. Mercury may be given alone, or combined with other substances, the best example of which is the liquor of the iodide



of arsenic and mercury, which is of service in syphilis, sycosis and various forms of cancer. The best method, however, of using mercury is by inunction.

*Iodine and its Preparations* have a large range of usefulness in treatment of diseases of the skin. They are said to influence the elimination of waste products from the system. Iodine is effective in small doses in the treatment of scrofula and lupus. Iodide of potassium is one of the most effective remedies in the tertiary stage of syphilis. Iodine and its preparations may produce a variety of cutaneous eruptions, therefore should be cautiously used. Turpentine, sulphur, tar, creosote, etc., may also be mentioned as having been used in the treatment of skin diseases.

*Local Treatment.*—The external means which have been employed for relieving or curing cutaneous diseases are innumerable. Some have value, while others are useless and hardly worth mentioning. Among those which have been found effective are the following:—

*Baths.*—Baths are essential for the preservation of the health, as well as to prevent and assist in eradicating disease, by drawing from the system effete products which are often the active factors in many cutaneous affections. They also have a local action in removing from the skin all abnormal products, such as irritating discharges, scales, etc., they thus assist both the constitutional and additional local treatment employed.

There are various forms of baths used in medicine, among them being the water, medicated water, hot air, vapour, simple and medicated, and the electro-vapour.

These are so well known and so fully treated of in various text-books, that I shall not do more than mention them.

*Oils.*—The oils employed locally in the treatment of cutaneous affections are either bland or stimulating. Among the former are olive oil, linseed oil, cod-liver oil, etc. They are valuable for softening and removing scales, crusts, etc., from the surface.

They are also useful for protecting and soothing the irritated and inflamed skin in the eruptive fevers. The tar oils, as the oil of cade, oil of juniper and oil of ergot, are examples of the stimulating varieties.

*Dusting Powders* are employed alone, or, combined, to protect the skin and, at times, to produce soothing, stimulating or a stringent action upon the parts.

The most useful are starch, zinc-oxide, boracic acid, oleate of zinc and prepared earth. The two latter are especially valuable; the oleate of zinc being particularly affective in many inflammatory cutaneous diseases.



*Ointments.*—They may be made from various fatty substances, but lard, suet, lanoline and petroleum jelly are usually employed. In reference to the proper base to employ for ointments, I will quote Dr. Shoemaker, who says: "The fatty vehicles intended for ointment bases are a matter of choice according to the indications of the case. While no doubt the most elegant preparations can be made with the petroleum fats, they form, in my opinion and in that of others, the least desirable substances for such use. I also consider them to possess a feebleness of penetrative power, if any at all, than animal fats, which have more affinity for the integument. They usually contain some irritating constituent, which lessens or destroys their emollient action and constitutes a great source of hinderance to their use as external remedies in active inflammation." Numerous instances are also cited by Mayo Robson in the London "*Lancet*" of severe irritation and erythema following the application of vaseline to the skin as a surgical dressing. It is probable that certain persons have an idiosyncrasy for vaseline used in this manner, but one should always be on one's guard in prescribing it. The substance to employ as a basis for ointments, therefore, should possess the power of penetrating the integument and not irritating it. Lard, suet and lanoline are all animal fats which are therefore best adapted for this purpose. In reference to the strength of ointments, it is obvious that no absolute rule can be laid down. The skin of individuals differs normally in sensibility and this difference becomes more marked when the integument is the seat of disease. In beginning the treatment of a case therefore, it is advisable to use mild preparations which can be gradually strengthened if necessary.

*Oleates* are another class of remedies employed in diseases of the skin. They differ in preparation from the ointments but their mode of application is similar.

Numerous medicaments have been prepared in the form of oleates and of late years have been largely employed and found very effective. They are recommended for their active solvent powers; deep penetration; freedom from rancidity; economy and antiseptic properties.

*Ichthyol.*—This was brought to the notice of the profession by Unna of Hamburg. It is procured from a bituminous rock in the Tyrol, which is said to contain decomposed animal matter and also contains among other things a large percentage of sulphur. It has a similar effect to that of both sulphur and tar, with often a more decided and beneficial action. In a 5 to 30 per cent. ointment, it is serviceable in psoriasis, eczema, acne, etc. It is also a good dressing in erysipelas, either in the form of an ointment, or dissolved in a mixture of ether and glycerine, or in collodion. It is of especial value in burns, which

so treated, present no vesication; pain invariably disappears soon after the application of ichthyol and the affected part soon heals up.

*Iodoform.*—The antiseptic and anæsthetic properties of iodoform render it a very valuable application in many diseases of the skin.. This substance is efficient, not by destroying the micro-organisms of disease but by rendering the tissue upon which it is spread an unfavourable soil for bacterial development. It probably also counteracts the effect of the toxic products. Iodoform is a decidedly beneficial remedy in various inflammatory conditions especially after suppuration or ulceration has occurred. Ulcerated bubo, chronic ulcers of the leg, scrofuloderma and bedsores are markedly improved by its use.

It is a valuable remedy also in burns. The exposed surface is protected from the attacks of microbes, while at the same time the dressing acts as a local anæsthetic and reduces suffering. There are two serious objections to its use, however, viz.:—Its penetrating and disagreeable odour, and a more grave objection, its toxicity. Caution, therefore, should always be observed in the employment of this potent drug.

*Peroxide of Hydrogen.*—This is a very efficient oxidizing and antiseptic agent. Its special value consists in its power of decomposing pus. In the management of many diseases of the skin, attended by suppuration and destruction of tissue, lotions of hydrogen peroxide are of decided service, as in the suppuration stage of acne, in ecthyma, carbuncles. In scarlatina the nose and throat may be disinfected by a spray of hydrogen peroxide.

*Antiseptics.*—The therapeutical resources of dermatology have been greatly enlarged by the introduction of many substances belonging to this class, which have the power either of destroying the specific organisms of disease, or of neutralizing their effects. As is well known at the present day, many cutaneous affections are due to the action of microbes. Abraded, blistered or burned surface furnish an excellent medium for the growth of many forms of bacteria. The problem of topical medication therefore, is to destroy the bacteria *in situ*, or at least, inhibit their further development and prevent the absorption of their toxic products. In lupus vulgaris an effective plan consists in destroying the nodules, and sprinkling the surface of the artificial ulcer with naphthol or iodoform. Carbolic acid has been widely employed in absorbing the progress of boils. It has been used in the form of a spray, of compresses soaked in a solution of suitable strength and kept in contact with the inflamed area, and by injection into the interior of the boil.

Similar measures are employed in the treatment of carbuncles. In the treatment of erysipelas also, great value is laid upon the use of such

substances as resorcin, corrosive sublimate, salol, etc., which are efficacious in limiting the extent and severity of the disease.

*Mechanical Measures.*—The following mechanical remedies can be employed for their systemic or local actions, or both, or as an assistant to topical medication.

*Massage.*—As a general remedy, massage has been long and favorably known, but has been seldom employed as a method of treating disease of the skin. In certain morbid states of the integument, it is, when properly used, most beneficial and often results in restoring the surface to its natural condition.

The functions of the skin are roused into full activity. The volume and rapidity of the cutaneous circulation are increased. The secretions of the skin are augmented and cutaneous respiration is promoted. From the sensory and tactile end-organs, a beneficial effect is produced upon the central nervous system.

Massage is a most important and valuable adjuvant in promoting and increasing oxidation in psoriasis and scrofuloderma. In these and similar pathological conditions the skin is rendered more active by its use, the effete products are removed and the red corpuscles of the blood are increased. It is especially advantageous in neuralgia in perverted sensibility, and trophic disturbance of the skin. In these neuroses, it relieves the pain and has also a tonic action upon the nervous system.

In chronic cases of eczema, where the integument is deeply infiltrated, rough, hard and dry, the application of massage breaks up the exudation, stimulates the absorbents, and removes the inflammatory products from the parts and restores them to their natural condition.

*Electricity.*—In the treatment of diseases of the skin electricity has an extensive and interesting field of application, and also, all the usual forms in which this agent is employed in general medicine and surgery have been utilized, to a greater or less extent in dermatology. The faradic or induced currents are more frequently employed than the currents of high potential from the static apparatus, but the most useful of all forms is the galvanic or voltaic current, which is of comparatively low potential, but of large volume. The moist structures of the human body are as a rule good conductors of electricity, but the dry skin, on the contrary, is a very poor conductor.

It is customary, therefore, to moisten the part to which electricity is to be applied and this is accomplished best by having the electrodes in the form of sponges set on handles, which may be then dipped in saline solution, as this forms a better conductor than pure water.

Electricity not only acts when properly applied, as a nerve stimulant, and to some extent as a vital energizer of growing cells, but also as an



alternative, when cell-action is abnormal. In some disorders of the skin the blood supply and sensation are deficient, and in these, electricity is beneficial, by notably increasing both. Not only are motor and sensory nerves stimulated, but the trophic and vaso-motor fibres have their functions likewise increased, so that in atrophic affections and disorders of the sensation, paræsthesia, etc., electricity is often of advantage. Static electricity is beneficial in many nervous affections of the skin, and the psychological effect of the sparks probably contributes to the curative action.

Paræsthesia is frequently relieved by it, especially where it is a symptom of senile or other changes in the skin. Neuralgia of the scalp, soles of feet, and other parts of the body are sometimes benefitted by it.

Corns, warts and other hypertrophic developments of the skin are often removed by the daily applications; while a similar result follows in cases of the tendency to repeated eruptions of blind boils, acne marks and sluggish lymphatic glands.

Faradic electricity is useful for about the same class of cases as static electricity. In acne lesions, papular and chronic eczema, psoriasis, etc., faradism often relieves the itching and redness and reduces the infiltration that may be present. Mild currents are needed, and if there is liver or stomach disorder, the positive pole is to be placed over the affected organ and the negative applied to the lesions upon the skin.

Galvinism is required for thorough epilation, and is unequalled as a stimulant in alopecia, if the hair-bulbs are still living. Antiparasitic applications are more efficient when applied by the electrodes and a moderately strong current employed to drive them into the skin. In chronic ulcers of the leg good results may be obtained by driving in weak solutions of corrosive sublimate in this way. Discolorations of the skin, freckles, chloasma, acne and birth-marks are generally amenable to galvanic treatment, combined in the latter affection with galvanopuncture if necessary.

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Original Communications.

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THREE CASES OF ABSCESS OF THE LUNG TREATED.\*

BY

JAMES BELL, M.D.,

Professor of Clinical Surgery, McGill University ; Surgeon to the Royal Victoria Hospital.

It is not my intention to bring before the society to-night a paper on abscess of the lung, but to present a patient on whom I have recently operated for this condition, and incidentally to refer to two other similar cases which I have previously treated by operation.

This patient whom I bring before you to-night was a strong rugged man, a farmer in New Brunswick, with excellent family and personal history, when he contracted pleuro-pneumonia in March, 1897. He was convalescent in two weeks, and gained rapidly for a month, when a troublesome cough developed. At the end of two more weeks he was examined by a physician, who told him that the lower lobe of the right lung was consolidated. As far as he is aware this condition never cleared up; the cough continued, and in July the expectoration was slightly tinged with blood. In October the cough grew worse, and he spit up at times large quantities of foul smelling pus, as much as a pint and a half per day. For a time these evacuations of pus were more or less intermittent, but gradually became of almost daily occurrence. At this time he suffered from perspirations and other septic symptoms. He lost 45 pounds during the first six months, but did not lose flesh afterwards. He had been obliged to remain constantly in bed, lying upon his right side from December of 1897. Whenever he assumed an erect posture or turned on his back, he was seized with a violent cough which necessitated his lying down again.

On admission to the Hospital in December the right side of the chest was prominent, expansion almost nil, except in the infra-clavicular

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\* Read before the Montreal Medico-Chirurgical Society, February 8, 1901.

region; and the anterior two-thirds of the right chest was absolutely dull.

Punctures were made with a large aspirating needle, but no fluid was discovered.

On admission, the quantity of pus evacuated was not so large as it had been some months previously, but it was horribly foetid. The diagnosis of pulmonary abscess was made, and on the 17th of December an attempt to anaesthetise him with ether had to be abandoned on account of the evacuation of this foul smelling pus into his bronchial tubes, and violent spasmodic cough. It was utterly impossible to anaesthetise him.

On the 20th December, 1900, an inch and a half of the ninth rib just posterior to the posterior axillary line was removed under local anaesthesia, Schleich's mixture being used. The operation was carried out with difficulty, as it was impossible to turn the patient over on to the left side. He was brought beyond the edge of the table, and the operation carried on from below. When the rib was excised a large aspirating trochar was introduced and pus was found of a character similar to that which had been expectorated. The lung was found to be adherent to the pleura, and was about three-eighths of an inch thick. It was opened by the thermo-cautery and enlarged with the finger. About three-fourths of a pint of pus escaped at the time of the operation. It was horribly foul smelling, so much so that the odor was not removed from the operating room during the remainder of the day. A large rubber tube was introduced after the cavity had been explored. The cavity was found to be a large one with irregular walls.

From the moment of operation he progressed favorably, and within a few days the foetor had disappeared from his expectoration, and he was able to turn on his other side, and on his back. He has gained over 30 pounds since the operation up to the present time, and with the exception of a small sinus is now perfectly well.

Of the other cases referred to, the first was a young man aged 24, who was shot through the chest at Fish Creek on the 24th of April, 1885; the bullet entered through the second left costal cartilage and passed downwards and outwards and made its exit through the seventh rib in the mid-axillary line. This man was subjected to much hardship for some time before proper hospital accommodation was secured, and he developed pneumonia, the greater part of the right lung being consolidated. He was also wounded in the hip, and had slight fever and a troublesome diarrhoea. He did not do well and soon intermittent expectoration of foul-smelling pus occurred.

On the 23rd of May the eighth intercostal space was opened just anterior to the posterior axillary line. The lung was found adherent to the chest wall, and the collection of matter was found to be some distance from this point. The wound in the seventh rib in the mid-axillary line

was then enlarged and a cavity as large as a Florida orange was evacuated. The contents of the cavity were foul smelling pus and portions of gangrenous lung.

This patient made an uninterrupted recovery, and within a few months was perfectly well and strong. (This case has already been reported in the *Montreal Medical Journal*, in a communication entitled "Cases of Gun Shot Wounds of the Chest.")

The second case referred to was of a boy 5 years of age, who after a left-sided pneumonia in December, 1894, developed a septic condition which was followed by periodical evacuations by the mouth of foul smelling pus. A dull area was found on the axillary line, extending back in a less marked degree towards the spinal column. A portion of the sixth rib was removed; adherent fibroid lung was found. Explorations with a large-sized trochar failed to discover pus.

This was on the 2nd of March, 1895. On the 28th of March exploration by a needle over the whole dull area failed to discover pus.

On the 26th of April, 1895, the patient was anæsthetised in an erect posture (on account of the difficulty from the pus pouring into the bronchial tubes when he was in a recumbent posture); a slight dull area was found just anterior to the posterior axillary line on a level with the fourth rib. An aspirating needle was passed through a hard firm structure inside the chest wall and pus was found. An inch of the rib was removed. The fibroid lung was perforated with the thermo-cautery to a depth of half an inch or more and a pint of foul smelling pus evacuated. A rubber tube was introduced and the conditions immediately improved and the patient made an uninterrupted recovery.

On the 26th of September the following year (1896) the patient was brought back to the hospital with an acute meningitis and died. No autopsy was permitted.

Some points of interest in these cases to which I would call attention are the following:—

The abscesses in each case followed a pneumonia, and judging from the symptoms, probably began as a local gangrene of lung tissue. As one would expect, the abscess communicated with the bronchi with the result that evacuations of horribly foul smelling pus, at first more or less intermittent occurred, and continued until the cavity was drained. In each case there was considerable difficulty about the anæsthetic, and in the case exhibited to-night general anæsthesia was impossible on account of the filling of the bronchi with pus which interfered with the breathing, and produced violent spasms of coughing. In this case, the attempt to administer ether, which was only maintained for a few minutes, kept the patient in a condition of semi-asphyxia and violent coughing for most



of the afternoon. In each case the lung was firmly adherent to the chest wall, making the operation almost as simple as that for empyema, and finally the results of draining the cavities were most satisfactory. Localization of the abscesses, alone, was difficult, the aspirating needle failing to give evidence of pus even when it had undoubtedly entered the cavity. This is easily understood when one considers that such a cavity is necessarily at times more or less completely emptied by a fit of coughing, and that its contents are moreover thick and viscid, containing generally much mucus and some shreddy material (gangrenous lung tissue), especially if the case is a comparatively recent one.

# CHRONIC MALIGNANT ENDOCARDITIS WITH PRESYSTOLIC MURMUR DUE TO VEGETATIONS ON THE MITRAL VALVE.\*

BY

F. G. FINLEY, M.D.

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McGill University ; Physician to the Montreal General Hospital.

W. G. aet. 22 was admitted to the Montreal General Hospital on Sept. 22, 1900, complaining of headache and pains in the limbs and back, and chilliness.

When 11 years of age he had typhoid fever and acute rheumatism about the same time. He had gonorrhœa at the age of 15. For the past 5 years he has done a good deal of bicycle racing, and has enjoyed excellent health.

For a week previous to the onset of the present illness he has felt tired and indisposed for work. He went to bed the day before admission to hospital and that night had a slight chill with severe headache.

*Status Præsens.* He is a muscular and well-developed man. The face is slightly flushed and the skin warm and moist. Temperature 101.2-5 to 103° on day of admission. The pulse is of normal volume and tension, 120, the arteries at the wrist are slightly thickened and show visible pulsation. The cardiac impulse is unduly forcible and is felt in the fifth space in the nipple line, and dullness is slightly increased to the left. The cardiac sounds are indistinct at the apex being replaced by a rumbling presystolic murmur, localised to the apex, and a loud systolic murmur, transmitted to the axilla and to the back, and heard over the heart to the pulmonary cartilage. There is a moderate pulmonary accentuation at the 3rd left space. The lungs and abdominal organs are normal. Urine S. G. 1031, alkaline, no albumen or sugar. A few triple phosphates and urates. No Ehrlich reaction.

A small patch of herpes developed at the angle of the mouth on Sept. 24th.

After being in hospital three days the temperature fell to 99.1-5 and for the next eight days ranged between 98 and 100.4-5, being higher in the evenings. The pains disappeared and he felt so well that it was with difficulty that he could be kept in bed.

The subsequent history of the case may be summarised as follows. Apart from some rheumatic pains in the joints of the lower extremities,

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\* Read before the Montreal Medico-Chirurgical Society, March 22, 1901.

the general condition remained good to the 23rd of October when a phlebitis of the right internal saphenous vein developed. Three days later there was an eruption on the abdomen closely resembling the rose rash of typhoid fever. A spot was excised and cultures made but with a negative result.

During the whole course of the illness the temperature was constantly above normal varying from 97° to 100° in the mornings to 101° to 103° in the evenings.

Evidences of emboli in the spleen and in the posterior tibial artery were observed. On Nov. 4th, there was acute pain in the splenic region with some tenderness and rigidity just below the costal border on the left side. A similar attack was present on the 24th. The organ never became palpable but its dullness extended to the costal border. On Nov. 9th, there was a severe pain in the right popliteal space, the foot was cold and the pulse in the posterior tibial artery was obliterated.

Dec. 5th. There was a moderate anæmia, R. B. C. 4,000,000 H. 60%. Cultures from the blood proved negative. Frequent examinations always showed an absence of the Widal reaction.

During the last two months of life the anæmia became very marked and there was great emaciation.

The cardiac signs altered somewhat during the illness. By Feb. 5th. the apex beat became displaced beyond the nipple in the 6th space,  $5\frac{1}{2}$  in. from midsternum. The first sound at the apex became loud and abrupt, and a prolonged thrill, preceding the cardiac impulse, could be sometimes felt at the apex. The murmurs continued, the presystolic being heard into the axilla. Alarming attacks of cardiac weakness were present during this period. In these the pulse ran up to 160 and became extremely weak and small, and there was orthopnoea and cyanosis. In the intervals between these attacks the pulse was rather small, extremely soft and dicrotic. Profuse sweats were occasionally present and there was on one occasion a subconjunctival hæmorrhage. On Jan. 23rd, there was a hyperresonant note in front of the chest on the right side with crepitations at the base behind. Owing to the weak condition no very satisfactory examination could be subsequently made, and the small pleuritic effusion found after death was doubtless responsible for the altered note in front of the chest. Death took place from marasmus, on the 13th of February, after a stay of 141 days in hospital. The temperature fell as low as 96° during the last 48 hours.

*Abstract of autopsy performed by Dr. D. D. MacTaggart.*

Anatomical diagnosis. Dilatation and non-ulcerative vegetative mitral endocarditis. Tubercular pleurisy with serous effusion. Suppurative infarct of spleen. Obliteration of posterior tibial artery.

The heart is considerably dilated weighing 400 gms. The right ventricle is thin measuring about 7-8 cm., the tricuspid orifice is much dilated. The left ventricle is thinned and dilated its walls being from  $\frac{3}{4}$  to  $\frac{7}{8}$  cm. in the thickness. The mitral orifice is of normal size, and the auricular surfaces of the mitral cusps with the chordæ tendinæ covered with numerous adherent vegetations of which the largest project about one cm. from the valve. There is no ulceration or loss of substance of the valves.

The pleura contains 4 pints of fluid and is covered with numerous miliary tubercles. The spleen is large and contains a large suppurating infarct. The posterior tibial artery is obliterated at the lower third of the leg.

#### *Remarks.*

The diagnosis in the first few days of the patient's illness was influenza in a case of chronic valvular disease. The rather abrupt onset with a slight chill, the pains in the head, back and limbs, the eruption of herpes and the presence of other cases of influenza in the city were suggestive of this condition. The diminution in temperature on the third day of his illness seemed to be further evidence of influenza. There were however no catarrhal symptoms and Pfeiffer's bacillus could not be demonstrated.

It soon became evident that some further cause than influenza was at work in maintaining the elevation of temperature—moderate as it was.

The old history of rheumatism with a double apex murmur and fever, in the absence of any other evidence of local disease, suggested a chronic rheumatic endocarditis, with an acute endocarditis added on. The mitral valve seemed to be alone affected, and stenosis and regurgitation were both thought to be present. The subsequent prolonged course was always regarded as pointing to a vegetative rather than to an acute ulcerative process—an opinion which subsequently proved to be correct. The evidence of emboli in the spleen and in the posterior tibial artery were strongly corroborative of the diagnosis, as were also the anæmia and the emaciation of the latter stages of the disease.

At one period the presence of a phlebitis and of rose spots suggested the possibility of typhoid fever. Repeated examinations always showed the absence of the Widal reaction and an excised spot failed to show any typhoid bacilli in cultures, although they may be readily demonstrated in genuine rose spots.

The occurrence of these spots, which are referred to by Bramwell and other systematic writers, might readily lead to an erroneous diagnosis, and it is satisfactory to have reliable methods of distinguishing such



pseudo-spots. The phlebitis which subsequently developed in the other side as well was doubtless a septic manifestation.

The cardiac symptoms were pronounced particularly in the later stages of the disease. Attacks of rapid and feeble cardiac action with dyspnoea were present on a number of occasions and the patient was on several occasions on the verge of fatal collapse. The great cardiac dilatation was doubtless a powerful factor in producing these alarming attacks.

Not the least interesting feature of this case was the presence of a presystolic murmur, a thumping first sound and an occasional thrill at the apex, signs which led to the diagnosis of mitral stenosis. The murmur was more of a rumble than the typical rub of a well marked case of stenosis, yet it was of such a character as is often heard in stenosis, especially after compensation has commenced to fail. The autopsy showed an entire absence of any mitral narrowing, but rather large vegetations projecting from the auricular surface of the valve were apparently the cause of the murmur, which was set up by the blood current in its passage from the auricle to the ventricle.

Pathologically and clinically it is impossible to draw a sharp line between a mild verrucose endocarditis and a malignant ulcerative form. All gradations are met between the two extremes. Although in this case no ulceration was present yet the progressively downward course of the malady place it in the category of malignant endocarditis.

The tubercles in the pleura were all of a small miliary variety and were evidently a late infection.

## SOME OBSERVATIONS ON THE WIDAL REACTION IN TYPHOID FEVER.

BY

H. M. LITTLE, B.A.,

Voluntary Assistant, Royal Victoria Hospital.

The Widal reaction, first described in a paper read on June 20th, 1896, by the man whose name it bears, has received an unusual degree of attention in medical literature, and careful investigations by many and competent observers since that date have led to an almost general recognition of its value, employed with due precaution, in the diagnosis of enteric fever. These are, however, from time to time, authoritative statements to the contrary, and doubts are not infrequently expressed of its actual diagnostic value. It would seem that depreciation of this kind, when not due to an entire ignorance of the significance of the test, may, in many cases, be attributed to faulty methods in laboratory technique. That an accurate knowledge of the requirements of the test, in its many details, is an all essential feature in estimating its true value, I can, thanks to many hours of fruitless labor in my early investigations, unfortunately, perhaps fortunately, bear witness to.

In the recent volume of Johns Hopkins Reports (Vol. VIII., p. 385), Gwyn, in a most excellent paper on the Widal Reaction, reports that in some 265 cases diagnosed clinically as Typhoid Fever, only one failed to give a reaction, and even this exceptional case proved later to be a paracolon infection. In addition, two typical cases, diagnosed conditionally as typhoid fever, failed to react. Thus:

(a) In cases certainly typhoid, 99.6% gave a positive reaction.

(b) In all cases, 98.1% gave a positive reaction.

In 151 cases in the Royal Victoria Hospital during the past twelve months, the reaction was present in all cases but one, and appeared as early as the 4th and late as the 33rd day.

In only one of the cases I have tabulated below was there any question as to the reaction, which even here has been marked "partial."

The complaint has been made, that, granting its presence, in the vast majority of cases it does not appear early enough; that other signs, such as splenic enlargement, rose spots, etc., may be present before the Widal reaction. Anyone who has noted the varying manifestations of typhoid fever, the possible absence of rose spots and splenic enlargement, as well as other signs, will not lightly refuse such valuable confirmatory evidence as is afforded by the Widal reaction, however late.

I need only refer to a case reported by Dr. Finley (See page 333),

where a young man with ulcerative endocarditis entered the Montreal General Hospital with a condition so closely simulating typhoid that it was only excluded by the absence of the Widal reaction. The early appearance of the reaction has never been especially urged in its favor. As a matter of fact recent investigations at the Royal Victoria Hospital show that often the Erlich's reaction appears first. Of Gwyn's cases, only 97, (or 37%,) gave the reaction on admission to the Hospital.

Unfortunately the proper examination of the blood is well nigh impossible outside a laboratory. The cultures require such constant care and are, even in spite of this, so prone to get out of order, that the most favorable surroundings for bacteriological work are indispensable. The importance of a proper method is evident to anyone who has given the subject a more than casual attention, and recent observers have so shown the liability to error from faulty technique, that the significance of the test can be said to depend wholly upon this factor in all its details.

The earlier reactions were all made with blood, freshly drawn, either entire, or with the corpuscles removed by clotting or centrifugation. This has been largely superseded, in public health work especially, by Wyatt Johnston's method with the dried blood. The abuse of this method may account for much dissatisfaction, as may be imagined from the pernicious habit of some practitioners who take two pieces of window glass, and, having obtained a drop of blood, compress it between the two glasses, firmly gluing them, and send the whole to the laboratory for diagnosis. In such cases an accurate dilution is an impossibility, and reaction and observer share any discredit. To favor greater accuracy, especially as regards dilution, in my own cases, the blood was collected in small Pasteur pipettes, which, with the aid of a match, were easily sealed and in which the serum soon separated and could readily be drawn off. The blood in these small serum tubes will keep for several weeks, and may be as easily carried through the post as the dried specimen on paper. When the blood was to be examined the small tube was broken in the middle and the serum drawn up into a capillary tube. By drawing out over the flame, about 8 to 10 cm. of glass tubing about 4 mm. in diameter, then carefully dividing, two tubes of the same calibre will be obtained from which the drops will be approximately equal, one of these may be used for serum the other for culture.

The proper preparation of the culture, is the greatest of all difficulties. Bouillon has for long been the generally accepted media; this should be acid, preferably exactly 1.5%; with alkaline media, the bacilli may clump spontaneously. Difficulties, which frequently arise in using bouillon, may be obviated by a most satisfactory method which I have tried at the suggestion of Dr. E. W. Archibald. The bacilli may be grown on acid agar and an emulsion made; this emulsion should not be made by mixing

bacilli with sterilized water, but by allowing sterilized water to run down over the surface of the growth and collect in the bottom of the tube.

For purpose of examination 19 drops of this emulsion culture were placed on a glass slide and then one drop of clear serum added and the whole intimately mixed. It has been recommended to use simply a drop of the mixture on a slide with a coverslip over it, but general experience is in favor of the hanging drop.

It should be remembered that, though the typical reaction demands complete cessation of movement and clumping, not one case in fifty will give this in a reasonably short time. Cabot, who has done a great deal of work on the subject, gives his idea of the reaction as "Clumping and slowing or cessation of movement." It is obvious that if only one drop be set up for examination, constant observation will be necessary; on the other hand, if a control of afebrile blood be set up at the same time, comparison of the two will early give an idea of the condition of the suspected blood. Still better, if a typhoid case is available, a second control may show how much reaction is to be expected from the culture in use. It is well to set the controls up early and examine both for abnormalities, as this may save much time and inconvenience in the way of getting new specimens for examination. In the undercited cases a double control was invariably used, and clumping with relative slowing of bacilli was taken as the standard. In all these only two gave absolutely typical reaction, *i.e.*, complete cessation of movement; one, a case of typhoid in the wards, complicated by hæmorrhage, the other a woman who had had fever three and a half years previously and whose blood reacted with a dilution of 1-50 in a comparatively short time.

During the past summer it was my privilege to examine the blood of the patients in the Royal Victoria Hospital on admission and during convalescence. Of those discharged convalescent from June 16th to August 16th, only one failed at discharge to give the Widal reaction. This was a young girl, æt. 8, whose attack had not been severe. This almost constant presence of the reaction was made a starting point for further observations later in convalescence. This work was by no means the first along the same lines, but that it was worth looking into may be further illustrated by two cases:

1. A case diagnosed post-mortem as Tuberculosis of the Bladder, gave on several examinations a distinctly positive Widal reaction. Was this a legacy of a previous typhoid infection?

2. A boy, æt. 16, in the wards with typhoid in June, was readmitted in September with a remittent fever. He gave a positive Widal reaction, but in a couple of days his temperature dropped to normal by crisis. In this latter instance the persistence of the reaction for three months might



have given rise to a false diagnosis of the second febrile attack (which was obviously not typhoid) had his past history not been given in a satisfactory manner.

Beginning with those recently discharged, I have been able to look up some 71 cases which gave reactions in the hospital in 1897, '98, '99, 1900. To avoid prejudice in the decisions of the test, the cases were examined by number, not by name, and no data was obtained till the reaction of the blood had been marked positive or negative.

Of these 71 cases, 12 were re-examined after an interval of six months. Of these, 8 gave the same reaction on both examinations, 4 were positive at first and negative later, none were negative at first and later positive. The above four have been included in the statistics given below, making in all some 75 cases. Of these:

42 were within 1 year after the fever.

13 others were within 2 years.

11 others within 3 years.

9 others within  $3\frac{1}{2}$  years.

The average age of the cases examined, was  $23\frac{1}{3}$  years.

Of the 42 cases during the 1st year, 24 were positive, 18 negative.

Of the 13 between 1 and 2 years, 5 positive, 8 negative.

Of 11 between 2 and 3 years, 5 positive, 6 negative.

Of 9 cases above 3 years, 3 positive, 6 negative.

There seemed in these cases to be no distinct relation between the severity of the disease and the duration of the reaction. Many severe cases lost the reaction within the year, while in another instance a girl, æt. 14, retained the reaction for over 2 years. It is true that of the three noted above as positive after 3 years, one had a relapse and peripheral neuritis, a second ambulatory typhoid, but the third, which of all the cases gave the best reaction, had no distinct characteristic. One notable feature of these three cases was the relatively great age. Thinking a comparison might be of interest I made averages of the ages.

42 cases under 1 year, average age, 19 yr. 10 m. Average age of those positive, 24 yr. 9 m.; of those negative, 16 yr.

13 cases under 2 years, average 25. Average age of those positive, 29; negative, 22 yr. 6 m.

11 cases under 3 years, average age,  $23\frac{1}{3}$ . Average age of those positive, 21 yr. 4 m.; negative, 25 yr. 6 m.

9 cases under  $3\frac{1}{2}$ , average age, 34. Average positive, 40 yr. 4 m.; negative, 31.

It will be noted that in all these instances, save one, the average of those positive is much higher than those negative, and that list includes the peculiar exception of the girl mentioned above.

Certainly no definite data seem obtainable whereby one can associate the duration of the reaction with the special feature of the disease. Neither the age of the patient nor the severity of the attack are unexceptionally in a definite ratio to the persistence to the Widal reaction. Nor can one believe (as many state) that its persistence after many years is due to the presence of the living typhoid bacilli, *e.g.*, cases of late bone lesions, cholecystitis, etc. (that is, where these complications appear months or years after and the blood still gives Widal). While the reaction often persists in these cases, it is not infrequently absent, and the not unusual absence of the reaction in late stages of the uncomplicated cases, when we are assured that living bacilli must still be present in the tissues, suffices to indicate the irrationality of any such theory.

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### NOTE ON THE TREATMENT OF THE HAIR IN TYPHOID FEVER.

BY

H. M. LITTLE, B.A.

In view of the fact, that in different institutions and in private practice, not a little variation of opinion exists as to the necessity of cutting the hair (or shaving the scalp) in typhoid fever, I have examined into the results of the treatment under different conditions—the observations being of interest, inasmuch as frequent statements have been made, that radical measures are wholly unnecessary as well as unkind to the afflicted individual. Sixty-two cases were examined some months after their affection, and the result of the various treatments noted.

Of these, 35 had their hair cut while in hospital, and in only 7 was subsequent falling out of the hair noted. Of these 7, 4 were cut late. The ultimate result in all, was a thicker growth of hair than ever before.

In 2 cases it was thought to be coarser than before.

Twenty-seven patients (15 women, 12 men) had not their hair cut, and in only 3 there was no falling out. Ten had to have their hair cut later to prevent baldness, 7 being females.

In 7 other cases not cut, 4 are very thin, 2 were still falling, and one curly before, is now thin and straight.

## A SHORT REVIEW OF DRIESCH'S WORK ON THE MECHANICS OF DEVELOPMENT.

BY

CRESSWELL SHEARER.

During the last decade a remarkable change has taken place in embryological science, an entirely new field of research has been opened up whereby many new facts have been discovered and old opinions have become altered. The initial impulse was given in this direction in 1883 by the investigations of Pflüger upon the influence of gravity and mechanical pressure on the segmenting egg of the frog. Since then a remarkable series of researches have appeared, the most important being probably those conducted by Driesch,\* which have for the time being thrown all other biological problems into the background. As long as the working embryologist was content to find in development nothing but phyletic relationships, and systems of classification, little heed was paid to the underlying factors and components of the developmental process itself. Until this time, beyond the discovery announced independently by Roux and Pflüger that the first plane of cleavage in the frog's egg coincides with the median plane of the adult body, little if anything was known of the determining causes of cleavage.

As most of you are aware the orthodox embryological doctrine traces the origin of the organs of the animal body back to layers, and these layers in turn back to certain of the primitive segments of the animal egg or ovum. Since in many eggs the segments destined to form these layers are distinguishable from the first by their size, contents, shape, position, etc., it was assumed that in the unimpregnated ovum there were definite areas by the growth of which particular organs of the animal were always produced. This principle, first distinctly laid down by Wilhelm His, in one of the most charming of scientific works (*Unsere Körperform*, 1874), has exerted the widest influence on embryological speculation. "The principle, according to which the germinal disk contains the preformed germs spread out over a flat surface, and conversely, that every point of the germinal disk is found again in a later organ, I call the principle of organ-forming germ-regions (*organbildende Keimbezirke*)."<sup>1</sup> It first occurred to Driesch to put this idea to the direct test of experiment. With this object in view he selected for study the egg of the sea-urchin (*Echinus*), partly on account of the

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\* *Entwickelungsmechanische Studien. Zeits. f. wissen. Zool.* 1892. Bd. LIII. p. 160. Id. 1890.

simple manner in which it develops, partly for the ease and abundance with which it may be procured. Perhaps, a brief account, first, of the normal development of this egg will help us better to understand his results. The eggs are laid in the sea water and are there fertilized. The conditions of their fertilization remind one strongly of the manner of pollination of some plants. You know how the pollen of pines has been recorded to have fallen on the decks of ships a thousand miles from land in such quantities as to dirty everything and half blind the sailors. So with these sea-urchins, so full with their spermatozoa is the sea, during the breeding season, it is nearly impossible to place their eggs anywhere in it and prevent their being fertilized. The egg on being fertilized divides into two, four, eight,—so far perfectly regular spheres. In the next division we get sixteen, of these four are smaller than the rest, being called micromeres, in contradistinction to the others which are larger and so called macromeres. After this the divisions become very complex and are not easily followed; they result in a hollow sphere with walls one cell thick, the most primitive larval form, the blastosphere or blastula, which in these animals is free swimming, unlike the corresponding stage in the higher animals. One-half the sphere now becomes invaginated into the other, as in making a double night cap fit the head, and we have the gastrula stage, which finally develops into the characteristic larval form of the echinoderms, the "pluteus."

Driesch took the fertilized egg and allowed it to divide into two cells, he then placed 50 to 100 of the eggs in a glass tube an inch and a half long, by half an inch wide, half filling the tube with water, he then shook the tube violently with all his strength for about five minutes. He found that he had separated by this shaking the blastomeres of his eggs, so that after shaking he had separated egg blastomeres instead of whole eggs in his tube. On letting these separated egg cells stand in fresh water for some time, he found that each cell had regenerated its missing fellow cell and formed a complete egg again, only these eggs were half the size of the normal egg. The next day these eggs went on to form perfect blastospheres one half normal size, finally developing into plutei which except for size showed no traces of irregularity. Driesch then argues thus: we start with half a sphere and we get a whole one—this can only happen in two ways. In the first case those cells which would have formed the mid-dorsal or mid-ventral parts—form the right side, or those cells which would have formed the anterior and posterior parts form the right side. When the union was only partially loosened the blastula showed an indentation which was gradually effaced. In one case, however, twin blastula enclosed in the same membrane and afterwards separating were found. In another remarkable case a pair of siamese twin plutei were found.



Driesch then carried these experiments a step further. He shook the segments of the egg apart when in the four cell stage, and found that he could get three-quarter size plutei, and also one-quarter, which were perfectly normal.

The next set of experiments that he engaged in were with the view of testing the effects of light, warmth, and pressure, on the development of the egg. The apparatus used was extremely simple. Ten minutes after impregnation a glass ring 10 mm. in diameter and 2 mm. thick is put on a slide, a drop of sea water with two eggs is put on a cover slip, and then inverted over the ring, and tapped till it falls to the bottom of the ring. The overlapping portion of the cover slip outside the ring is filled with water so as to prevent the evaporation of the water inside the ring and the necessary concentration of the salt. The effect of heat say  $30^{\circ}$  C. was very curious, sometimes two distinct heaps were formed by the cells in the 8 and 16 cell stages. When removed from the action of heat at this stage, this incipient doubleness disappears; if allowed to stay longer we get double blastulæ formed, some times a sausage shaped form with a furrow. The heat was not allowed to act longer than the sixteen cell stage. In the first division when subject to heat, the two cells do not touch one another as in the normal egg, but their adjacent surfaces are separated and have a serrated and jagged appearance as if torn; this does not occur in the four cell stage. The eight cell stage showed interesting modifications. The normal arrangement is of course where

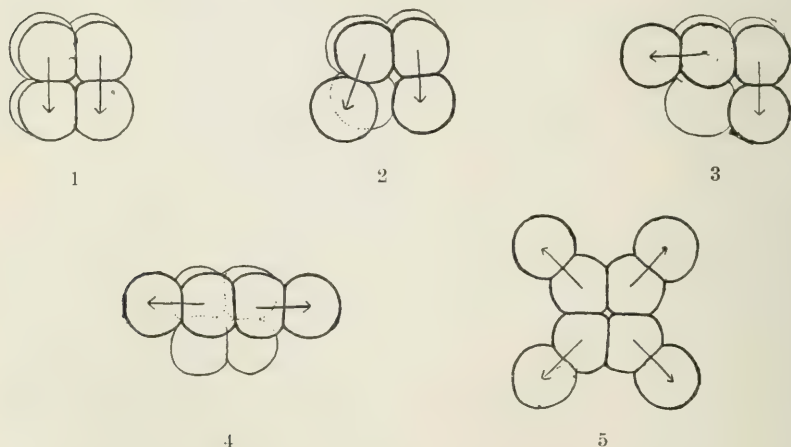


Fig. 1. The normal arrangement of the blastomeres in the egg of *Echinus* in the eight cell stage. Fig. 2. The arrangement of the blastomeres in the eight cell stage produced by the application of heat, one blastomere is at an angle of forty-five degrees. Fig. 3. Where one blastomere is at a right angle. Fig. 4. Where two blastomeres are at right angles. Fig. 5. Where four blastomeres are at right angles and all the blastomeres in the same plane.

the four spindles out of which eight nuclei have proceeded are vertical to one another. This may be modified by one spindle being placed at an angle of  $45^\circ$ , again this spindle may even be at right angles to the rest, and this may happen with two out of the four spindles, and finally all of them may be horizontal. Many of all these forms developed into perfectly normal plutei.

The result of experiment to test the effect of light, may be briefly stated as almost negative. Darkness delays development slightly, so does red light, green light delays it very considerably, while blue and violet hurry it.

The influence exerted by pressure was most interesting. A number of impregnated eggs were placed on a slide under a long cover slip. A bristle placed under one end of the slip relieved the pressure there, so all degrees of pressure were obtained extending from one end of the slip to the other, being least nearest the bristle and greatest at the other end of the slide. The effect of pressure is perfectly definite. Nuclear spindles which would otherwise be vertical, that is parallel to the line of pressure, become horizontal, so that in the eight cell stage and also in the sixteen cell stage the cells are radially disposed. In the sixteen cell stage we ought to have four micromeres: under pressure we have two at the most and usually none. When the pressure is less, vertical spindles appear in the sixteen cell stage. In all cases except where pressure is first applied in the four cell stage, as soon as the pressure is removed and the eggs washed in fresh sea water they recover their normal form. When, however, the egg membrane is burst by the pressure, then different effects follow. The four cell stage is mostly normal but occasionally has the form of four cells in line, when we remove the pressure this abnormal form is retained. The eight cell stage has a similar shape only consisting of two rows, of four cells in line instead of one.

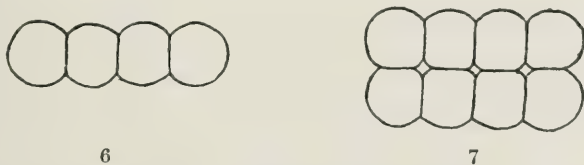


Fig. 6. The condition produced in the four cell stage of the egg of *Echinus* by the application of pressure the egg membrane being burst, the four blastomeres are arranged in line. Fig. 7. The condition produced by the application of pressure in the eight cell stage, the blastomeres being arranged in two lines.

The sixteen cell stage consists of a two layered plate, each of the eight cells dividing by a spindle perpendicular to the surface. Exam-

ining for a moment the eight cell stage figured above, we see that the four cells which ought to have formed the upper pole lie now along one side or anteriorly and posteriorly. In the sixteen cell stage the four



Fig. 8. The arrangement of the blastomeres in the eight cell stage of *Echinus* in which the blastomeres forming the lower and upper poles lie along side one another. Fig. 9. The arrangement of the blastomeres were they do not lie along side one another, the lower pole cells being separated and placed on the right and left of the upper pole cells.

cells which ought to have formed one pole, form upper and lower poles, the other four cells which should have formed the other pole form the sides of the blastula, since all future divisions are tangential and the blastula sausage shaped; later it becomes spherical, but this cannot alter the fact that the poles have been formed from abnormal regions. In fact it is a general rule that horizontal spindles only are formed as long as the pressure continues, so we get a plate of sixteen cells or we can get thirteen cells in one layer, and three in another at will. The two layered plate which is the result takes on the normal form of the blastula, and develops into a perfectly normal pluteus. Of course as will be readily understood, a sixteen cell plate is often broken into two pieces which give rise to two blastulæ.

The conclusions which Driesch draws from these remarkable experiments, are that the blastomeres of *Echinus* are of uniform material, which can be shaken together in any way without altering the result of their development. To quote his own words they are, "Composed of an indifferent material so that they may be thrown about at will, like balls in a pile, without the least impairment of their power of development." Hence the development which a given blastomere will undergo is a function not of its material, as both Hertwig and Weismann and their schools have assumed, but in the words of Driesch, "their prospective value (Bedeutung) is a function of their location." In no sense, therefore, in the light of these experiments can the cell be regarded as an isolated and independent unit. Again, they bring us back to the fact that, "The only real unity is that of the entire organism, and as long as its cells remain in continuity they are to be regarded, not as morphological individuals, but as specialized centres of action into which the living body resolves itself, and by means of which the physiological division of labor is effected." (E. B. Wilson.)



Let me point out the bearing of these experiments upon our existing theories of heredity and development. As some of you may be aware, we have to-day two diametrically different theories of development, the lineal descendants, in a modified form, of the issue between the schools of the Preformationists, and the Epigenesists of two hundred years ago. The first of these theories in its modified modern form, the so-called "Mosaic theory," which I may state has nothing to do with Moses or the Mosaic law, seeks the cause of development in the nature of cell division. Cell division according to this view is nothing but the sifting apart of the various hereditary germs stored in the chromosomes of the nucleus of the fertilized egg; as development goes on each cell during division receives its store of hereditary qualities, which determine the part it shall play in the entire organism. The entire ontogeny is thus compared by Roux to a veritable mosaic-work. This theory is of additional interest to us from the fact under the influence of Weismann it has been most brilliantly elaborated and charmingly presented, its proportions becoming truly colossal. These primary hereditary germs, which he calls "biophores" are according to his ideas aggregated to form "determinants," the determinants to form "ids," and the ids to form "idants," which are identified with the chromatin of the nucleus. Lately Weismann, has had to modify his theory to account for the experiments of Roux, in which he destroyed one of the blastomeres of an egg with a hot needle, and got the missing blastomere regenerated in a manner similar to the way Driesch's blastomeres after being shaken and separated, regenerated their missing halves. He supposes that in addition to the specific hereditary germs which each cell receives during division, it also receives a latent series of germs which are only called into action by some injury as the destruction of one of the blastomeres, or their mechanical separation, when they immediately become active and cause regeneration, or the repetition of the original development, during the course of normal development they remain latent and are dominated by the specific germs. It is the highly imaginary nature of Weismann's speculations that have failed to make them carry conviction, for it is unnecessary to say that these latent germs, qualitative cell division, etc., are pure assumptions on his part, and are as Wilson has remarked statements about phenomena, of which at least for the present we are quite ignorant. It is in the light of these experiments however that Weismann's theory encounters its greatest difficulties, and entirely breaks down. During the last few years Weismann's views have attracted less and less attention, and they may be said as instruments of scientific thought to have served their day.

Let us for a moment regard the second theory of development, what



Wilson has designated the "anti-mosaic conception" and see whether it contains a larger element of truth. This theory is the descendant of the theory of epigenesis so ably championed by Wolff in 1759 in his celebrated "*Theoria Generationis*," where by a most remarkable series of observations he tried by actual experiment to show the fallacy of the then popular theory of preformation. To Wolff all development proceeds by new formation, the germ consisting of unorganized material which little by little in the course of development becomes organized. To-day differentiation is to be sought in the interaction of the parts of the embryo, the individual cell being determined by its environment and position. "The egg," says Hertwig, "is an organism which multiplies by division to form numerous organisms equivalent to itself, and it is through the interaction of all these elementary organisms, at every stage of development, that the embryo, as a whole, undergoes progressive differentiation. The development of a living creature is in no wise a mosaic work, but, on the contrary all the individual parts develop in constant relation to one another, the development of the part is always dependent on the development of the whole."

"I would accordingly conceive," says Pflüger, "that the fertilized egg has no more essential relation to the later organization of the animal than the snow-flake has to the size and form of the avalanche which, under appropriate conditions may develop out of it."

As the essential process of the production of form is according to Driesch's experiments the same in the normal as in the abnormal condition we naturally see how he sides with this last view of development, and is now its stoutest champion. For in the light of his experiments how can the formation of the embryo be regarded as a piece of mosaic work, the unfolding of preformed hereditary qualities, when by experiment it can be so altered and even obliterated without affecting in the least the final outcome of development. Development is epigenesis. How are we to conceive the determinants of a blastosphere pre-existing as a structure of particles in the fertilized egg nucleus when we know from experiment that their shape, size, and position, are determined by the influence of gravity, their position in the egg mass, the character of their protoplasm, etc.? To quote Hertwig again, "The conditions for the origin of the blastosphere come into existence only by the process of segmentation; it is only by its capacity to divide that the egg contains the conditions of blastosphere formation. Here we have epigenesis—the appearance of a new formation, not the becoming visible of pre-existing complexity."

Let me conclude my remarks by saying that no theory of development can hope to afford us a proper explanation of development which alone

considers mere mechanical conditions, whether these be intrinsic or extrinsic. We must remember that the living substance of which the cell is formed has the quality of taking in substances from the outside and giving out substances to the outside, the metabolism, the elementary vital process, as Herbert Spencer defined it, "the continuous adjustment of internal to external relations," in short the life of the cell; it is with this that every theory of development will have first to deal. "Development is the expression of the metabolic relations between cell and medium, conditioned by growth." As Verworn has remarked this can scarcely be better expressed than in the words of Karl Ernst von Baer himself, the father of embryology, who thus states the most general result of his studies upon the embryology of animals that, "The developmental history of the individual is the history of the growing individuality in all its relations."

## A SPECIMEN OF BOTHRIOCEPHALUS LATUS.\*

BY

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Royal Victoria Hospital, Montreal.

The specimen, which is herewith presented, was found in a patient attending the out-patient department of the Royal Victoria Hospital, and was voided by him without the use of any known anthelmintic. On his second visit to the hospital he brought this parasite with him, stating that this was the second time in the past five or six months that he had found such a worm. The complaints which he had made on his former visit in no way led to the suspicion of his harboring such a parasite, but rather pointed to some neurasthenic condition.

On observing this specimen one was at once struck with the remarkable contrast which it presented to the ordinary tape-worm found in Canada. It was much darker in colour, its segments very much shorter than those of the common tape-worm, and, on closer inspection, one failed to find any evidence of a lateral genital pore. When held against the light each segment or proglottis presented a central brown rosette, in striking contrast to the general finely-divided uteri and oviducts of the common tape-worm.

The ova, as shown in the specimen under the microscope, are distinctly larger than those of the beef tape-worm, being of an oval shape, of a brown, or yellowish brown colour, and thus showing another contrast to the ova of the above mentioned and more common tape-worm.

It was thus apparent that we had to do with an unusual intestinal parasite, at least rare in this country, and, so far as the observer is able to ascertain, found only in those who have resided in certain foreign countries. On further enquiry of the young French-Canadian who harbored this parasite, it was found that he had never dwelt outside of Canada and rarely outside of the province of Quebec. It is interesting to note in connection, that his habit of life for some years from spring time to autumn has been that of a wandering sportsman, fishing and hunting and camping, and doing his own cooking for several months of the year.

Of the parasite, the total length presented was 27 feet, and although the head was not found, still it would appear that the parts examined were sufficiently characteristic to indicate that the parasite was a *bothriocephalus latus*. Briefly enumerated they are as follows:—The total length, although not completely represented in the amount under obser-

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\* Read before the Montreal Medico-Chirurgical Society, March 22, 1901.

vation; the pigmentation; the short segment with its dark brownish rosette in the centre, and its breadth greater than its length; the absence of a lateral genital pore and hence though not demonstrated a central genital pore; and the characteristic oval brown ovum.

The patient was in no degree an unhealthy individual and, judging from the colour of his skin and mucous membranes, anæmia did not exist. It would seem, then, that this is a genuine case of a Canadian harboring a *bothriocephalus latus* or fish tape-worm.



## REPORT OF A CASE OF TENDON GRAFTING FOR PARALYSIS FOLLOWING ANTERIOR POLIOMYELITIS.\*

BY

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The patient who is presented to you to-night suffered from what was apparently, an attack of anterior poliomyelitis, six years ago. Since then he has been unable to walk without the aid of a brace. He was brought under the writer's notice last November. At that time he walked with a very distinct limp, and was wearing on his left leg a short double upright brace probably with the object of correcting the tendency to foot-drop.

On examination it was found that the muscles of the left thigh and calf were markedly atrophied, and that the foot was held in the position of equino-valgus. By manipulation and change of position it was noted that the anterior tibial muscle was much weakened, if not entirely functionless. This resulted in eversion of the foot, especially marked on attempted flexion. The functions of the extensors longus digitorum and hallucis seemed unimpaired. Those of the tibialis posticus and other muscles arising from the posterior surfaces of the tibia and fibula were much weakened. The muscles of the thigh except the sartorius seemed atrophied and weakened.

Through the kindness of Dr. Cushing the writer is able to report that the results of an electrical examination of these muscles which was made at the Royal Victoria Hospital were similar to those made by clinical examination.<sup>(1)</sup>

As the patient's mother contended that the deformity was increasing, in spite of the treatment received, during the past five or six years, it was considered advisable to try the result of operative interference.

The following were the operations considered, each of which aimed at the restoration of the functions of tonic flexion and inversion lost through the atrophied condition of the tibialis anticus muscle.<sup>(2)</sup>

(1) The grafting of the tendon of the extensor proprius hallucis to that of the tibialis anticus.

(2) The grafting of a slip from the tendon of the tibialis anticus muscle into that of the peroneus tertius or extensor longus digitorum, or *vice versa*.

(3) The grafting of a slip from the tendo achillis into the tendon of the tibialis anticus.

By the kindness of Drs. Perrigo and Jack, the patient was admitted, under the writer's care, as a semi-private in the Western Hospital on

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\* Read at the Montreal Medico-Chirurgical Society, April 12, 1901.

December 2nd last. On December 3rd, the patient being anæsthetised, the operation was begun by an incision being made from the external malleolus to the insertion of the tendon of the tibialis anticus. The tendon sheaths were then exposed. The tendons of the common extensor and proprius hallucis were found to be in fair condition and size. That of the peroneus tertius was absent.<sup>(3)</sup> The tendon of the anterior tibial was small and weak. The further steps in the operation were: The tendon of the tibialis anticus muscle was split upwards from a point one and one-half inches from its attachment for a distance of nearly two and a-half inches. At this point the outer half was detached, at its highest point, and carried to the innermost tendon of the common extensor which had been further exposed by an incision overlying it, when the absence of the peroneus tertius was discovered. This portion of the common tendon of the tibialis anticus was freshened, carried through it, and sutured there.

Attention was then directed to the inner half of the split tendon of the tibialis anticus muscle. This was next approximated to the tendon of the extensor proprius hallucis, which having been freshened, was sutured to it. The foot had been previously placed in the varus position. The cutaneous incision was then sutured with catgut, and the foot having been retained in the varus position, the child was incased in a single plaster of paris spica extending from his left nipple to the toes of that foot. In three days the patient was removed to his house, where he remained with his foot incased in plaster for three months.

After this period the plaster was removed and a cast having been made of his foot a brace comprising a single upright which extended from his knee to a Whitman foot plate was prepared for his use. The child was then allowed to resume his ordinary habits.

Conclusions: By the improved position of the child's foot it seems probable that there has been perfect union of the tendons grafted, and although the patient's left leg is never likely to be in as good condition as that of his right, it can at least be hoped that the improvement will be progressive as the common extensor and proprius hallucis muscles become stronger and better able to do not only their own work, but that of the anterior tibial.

#### REFERENCES.

1. Results of an examination made by electricity by H. B. Cushing, M.D., at the Royal Victoria Hospital, Montreal, November, 1900.  
 Tibialis anticus, little or no power.  
 Tibialis posticus, little or no power.  
 Extensors of foot, impaired in function.  
 Extensor longus digitorum, normal.  
 Peroneus tertius, probably normal.  
 Extensor longus hallucis, normal.  
 Peroneus longus and brevis, doubtful.
2. In arranging these operations it is impossible to state definitely till an ocular examination of the tendons has been made what will be the operation of choice.
3. It will be noted that by electrical examination it was impossible to state definitely the existence or non-existence of this muscle.

## IMPRESSIONS OF TEACHING IN THE EDINBURGH ROYAL INFIRMARY.

BY

CLARENCE GREY, M.D., C.M., L.R.C.P. & S.E.

The Edinburgh Royal Infirmary has well been called the "backbone" of the Edinburgh Medical School. A hospital of over eight hundred beds, with a large staff of professors, lecturers, demonstrators and tutors, all apparently devoted to their work, cannot fail to act as a stimulus to the most listless student. Not only is there an excellent opportunity of doing ward work during the day, but the clinical laboratories and wards are also open to the students from seven to half-past eight in the evening, and under the guidance of the clinical tutors, students are able to turn to good account an hour in the evening which is frequently of little value to them. It is during the evening hour also that tutorial classes are held in the clinical subjects. On the teaching staff of each subject is a tutor who acts under the superintendence of the professor, and in the wards or lecture theatre brings to the notice of the students and explains the more minute but still practical points which the professor may have failed to touch upon in the course of his systematic lectures. Before the tutor, the student does not attempt to conceal his ignorance or hesitate to ask questions which he might feel disinclined to ask of the professor. In this way the tutor frequently proves of much assistance to those who are backward in their knowledge. There is no extra fee for these classes, and attendance is not compulsory, and one may infer from the number of students who take advantage of them that they are much appreciated. Indeed the students depend upon these classes for the greater part of their practical training. The clinical tutors in surgery and gynæcology, in addition to giving instruction in the usual routine work, exhibit instruments, explain their uses, and give practical instruction on the application of splints, etc.

A course in clinical diagnosis is given by the clinical tutor in medicine: which is supplementary to a series of demonstrations with which the professor precedes his course in clinical medicine. In this subject a stranger is much impressed with Professor Wyllie's course, for besides graphically illustrating each sign, he is happily able to imitate with his voice many of the pathological sounds heard in the chest. These sounds he requires the students to repeat after him, giving them the "time rhythm" for each heart bruit, by striking his hands. A large number



of students in the act of imitating cardiac bruits by blowing with the lips, slapping the knees, etc., is a rather noisy procedure, and is apt to be disconcerting to the onlooker: but that it is of value to the student no one who has attended these classes would doubt for a moment.

Such a teaching method as this is of special value in Edinburgh, where there is a greater proportion of students to patients than obtains in Montreal. The Edinburgh student must be previously prepared so that he can grasp abnormal phenomena quickly and make the most of every case he examines, for in respect to material he is not so fortunate as his Montreal brethren.

In the operating theatre and surgical wards the students replace the nurses to a large extent. Two students sterilize and take charge of the instruments, one attends to the ligatures, while a fourth administers the anæsthetic. Chloroform is the anæsthetic in common use; ether is seldom administered. One rarely sees more than two nurses in attendance, and one of these has charge of the sponges, changing the solutions, etc.

Necessarily this work is a tax on the students' time, but the training and valuable knowledge he obtains more than compensates him for the loss. The course for the degree extends over five years of about eight months each. The student enters upon his hospital work and lectures in medicine or surgery early in his course, and in both these subjects lectures and clinical work are undertaken simultaneously but in one subject only each year.

The student must overtake a certain amount of work before he is allowed to go up for examination, but he is permitted within certain limits to plan and apportion his own time and studies. The system of extramural teaching permits him to make choice of his lectures and clinical teachers, and if he is inclined to extend his studies in any direction he is at liberty to do so. Perhaps it is this want of definite guidance which is the cause of so many studying with a "coach," who keeps his pupils steadily at work and directs their energies to the greatest advantage.

In the surgical out-patient and dispensary work the student is allowed certain positions which give him an opportunity of testing his knowledge and resources. He is also allowed to attend dispensary and obstetrical cases at their own homes.

The surgical out-patient consultations are conducted in a large lecture theatre. The cases for this clinic are selected; new cases are chosen, and "repeats" are only occasionally exhibited to show results of treatment. Many cases are sent in to this clinic by outside practitioners. This clinic is attended enthusiastically by the students, and when any specially interesting case is only able to be seen by a few at the time the clinic is going on, the patient is retained until it is over for closer examination by the other students.



The Infirmary out-patients are not supplied with medicines, but are given prescriptions which they have filled at a reduced rate by any druggist. Besides the ordinary out-patient medical clinic, Dr. Andrew Smart and Dr. Byron Bramwell hold special clinics, which are attended by the senior students. The facts in each case are deduced by questions asked by the teacher at the students' request. Suggestions as to the treatment are criticized by the teacher, who afterwards makes a few general remarks upon the disease of which the patient may be a type.

Venereal diseases are treated in a separate department; many cases both ward and out-patients are seen and contrasted, and special demonstrations given on each form of disease.

The skin clinic under Drs. Allan Jamieson and Norman Wallser is held in a lecture theatre and each case is made to go around the theatre so that the students are afforded an opportunity of more closely examining it.

A clinical course in infectious diseases is compulsory, and each student is required to take a course at the City Hospital where typhoid fever is also studied.

The course in gynecology includes ward work and history taking. The operations are replaced once a week by a course in practical examination; at this time the patient is generally under an anæsthetic.

One should not fail to mention the excellent tutorial teaching given in this subject by Dr. Lackie.

The final examinations before the Royal College are essentially practical; more value, it is said, is placed on the oral and clinical examination than on the written. A thorough knowledge of anatomy is demanded, and on this subject the student may expect to be asked the most minute question both in the clinical and in the oral examinations in surgery, besides receiving a paper on surgical anatomy. A final year student was overheard to say that he found himself rather deficient in his surgery, but that he was devoting all his time to anatomy in the hope that the latter would enable him to pass in surgery. He was not successful, but it may serve to show the importance attached to anatomy in the surgical examination.

A rather curious feature about the Edinburgh student is that he does not seem to be worried over being occasionally "plowed," to use the local expression. This may be because on an average he is better off financially than his colonial brother, or perhaps sad experience has rendered him used to discomfiture. In the recent examinations for the triple qualification only 42 per cent., or 33 out of 78, were successful, and many of these had gone up for examination on one or more previous occasions. £10 is the amount forfeited by the unsuccessful candidate, so that the above figures are all the more remarkable. On the whole, medical edu-

cation is much more expensive in Edinburgh than in Montreal, £30 (\$150.00) being the fee paid for examination alone. In Canada, however, the medical boards of the provinces endeavour to make up for this difference, as registration costs more than twice as much as in Great Britain.

Unquestionably one must recognize many good points in the Edinburgh method of teaching, arising possibly from an effort to overcome the difficulty of handling a great number of students. No clinical material is lost to the student for the want of demonstration. Each case whether in the out-patient clinics or in the wards, besides receiving treatment, is exhibited and made the subject of a short clinical lecture. Division of labour and extramural teaching, the latter producing a friendly rivalry between the teachers, are no doubt also important stimulating factors. I may also add that in the clinical lectures pathology and treatment receive special consideration, the latter being seldom left to a few concluding remarks, and in the final examination there is both a written and oral examination in therapeutics.

# RETROSPECT OF CURRENT LITERATURE.

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## Pharmacology and Therapeutics.

UNDER THE CHARGE OF A. D. BLACKADER.

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### The Suprarenal Gland.

JOKICHI TAKAMINE, M.D. "On the Blood-Pressure Raising Principle of the Suprarenal Gland." *Therapeutic Gazette*, April, 1901.

Although the active principle of this gland dissolves readily in water, an aqueous extract is apt to deteriorate rapidly and become utterly useless, sometimes dangerous. Various preservatives have been tried, but few have proved successful. Recently various attempts have been made to isolate the active principle. Dr. Abel announced in 1898 (*Bulletin of the Johns Hopkins Hospital*, Sept. and Oct.), that he had succeeded in isolating a substance which he considered to be the active principle, and named it epinephrin. But, shortly afterwards, Dr. Furth of Strassburg criticised his methods, and claimed to have attained the isolation of the true active principle by a different method. Neither Dr. Abel nor Dr. Furth, however, were able to obtain their principle in a chemically pure form. In the present paper Dr. Takamine announces that he has succeeded in isolating what he believes to be the blood-pressure raising principle of this gland in a stable and pure crystalline form, a principle which he terms adrenalin. Adrenalin is described as a light white microcrystalline substance showing itself in several different crystalline forms, the form varying according to the condition of the solution from which it is made. It has a slightly bitter taste, and leaves a numb feeling on the tongue at the spot to which it has been applied. When dry it is perfectly stable. On heating it over 200° C., it turns brown, melts, and at a still higher temperature it is decomposed. It is with difficulty soluble in cold water, more readily in hot. Adrenalin shows a slightly alkaline reaction on moistened litmus paper. The colourless aqueous solution is easily oxidized by contact with the air, its colour changing from pink to red, and eventually to brown. Adrenalin is easily soluble in acids or alkalies, and forms salts which are crystallizable with difficulty. The physiological activity of adrenalin is

well marked; an aqueous solution of the strength of 1 in 10,000 blanches the normal conjunctiva within from 30 to 60 seconds. It is a powerful astringent. Intravenous injection of it produces a powerful action upon the muscular system in general, but especially upon the muscular walls of the blood vessels, and the muscular wall of the heart, resulting in a great rise in blood pressure. A test of the comparative strength of adrenalin with that of the fresh extract of suprarenal gland shows that adrenalin is 625 times stronger than suprarenal extract.

The therapeutic applications of adrenalin are already numerous and new uses for it are constantly being found out by different experimenters. Applied locally it is the most powerful astringent and hæmostatic known. It may be of service in all forms of inflammation; it is a stimulant to the heart muscle. At the same time it greatly increases the work of the heart. It is said to be non-irritating, non-poisonous, and non-cumulative. Its employment has given satisfactory results in the treatment of the following diseases and conditions: acute conjunctivitis, some forms of deafness, laryngitis, laryngeal phthisis, asthma and hay fever, nasal hæmorrhage and in hæmophilia and exophthalmic goitre. The writer regards its therapeutic efficacy as established beyond doubt, and thinks that unquestionably it will attain to a prominent place in *materia medica*.

BATES, W. H., M.D. "A contribution concerning the efficacy of the Suprarenal Gland, both internally and locally, with report of cases." *International Medical Magazine*, December, 1900.

Dr. Bates has, for some years, employed the dried and powdered gland, by placing 5 grains on the tongue, and directing that it be gradually swallowed, without water. In this way he thinks that a portion is absorbed, before reaching the stomach. For local uses he prepares a solution by mixing one part of the dried gland with 10 parts of water. After standing a few minutes, this is filtered, and is ready for use. Fresh solutions should be prepared as required. The solution may be sterilized by heat, without destroying the active principle. A large number of preservatives have been employed, to prevent changes taking place in the solution. Dr. Bates states that he has experimented with every antiseptic which has been recommended; and all have disappointed him. The extract forms the best known hæmostatic. It controls nasal hæmorrhage, in bleeders. For operations in the nasal passages it is beyond praise. After its use, hypodermically, the normal skin may be incised, without the loss of a drop of blood. This statement, he says, may seem extravagant, but has been confirmed so often, in his experience, that he regards it as absolutely true. Secondary hæmorrhage may be expected, because the action of the remedy, like the other therapeutic



agents, is temporary; but he states that he has less secondary hæmorrhage now than before, when suprarenal was not used. Although the suprarenal is so powerful, it is not objectionable in any way. It has been employed, with much success, in patients the subject of hæmophilia. Hæmorrhage from the stomach and bladder has been controlled by the extract used locally, and its internal administration has stopped uterine hæmorrhage, in epithelioma of the cervix; it is also a most powerful astringent. It is of much value in acute inflammations of the mucous membrane of the eye, ear, nose, and throat. In stomach inflammations, the astringent property of the extract is a valuable adjunct to antiseptic or other treatment. The suprarenal extract is the only powerful remedy which can be instilled in all diseases of the eye, without producing harm, and is of much service both in iritis, conjunctivitis, and glaucoma. Dr. Bates states that the continual use of the suprarenal, in the eye, is followed by no bad effects. It is also of great value in inflammations of the ear. In affections of the nose and throat, Roe states that he can hardly find words to express his appreciation of it. There is no styptic, he says, that compares with it in the prevention or arrest of nasal hæmorrhage, and no remedy so potent in the arrest of acute rhinitis and colds in the head, in the control of hay-fever and asthma, in the reduction of inflammation about the fauces, in the control of tonsilitis and laryngitis, and in the reduction of oedematous conditions, particularly of the larynx. Combined with this direct control of local disturbances, it has not only no depressing effect upon the system, but, on the contrary, a decidedly tonic effect. Roe mentions a precaution that should be observed in applying dressings, after the employment of the suprarenal extract. The dressing should be made much lighter than would be used in controlling hæmorrhage when the extract was not employed, else, with the re-establishment of the circulation, the pressure may be too great. Its local application has given also much relief, in hay-fever. It is said also to be of service in oedema of the glottis, in bronchitis and hæmoptysis. Bates describes it as a powerful heart stimulant, safe, rapid, and efficient.

LEWIS S. SOMERS. "The Employment of the Suprarenal Gland in Hay Fever." *Philadelphia Medical Journal*, December 8, 1900.

Dr. Somers has employed the suprarenal gland both applied locally and administered internally in the treatment of hay fever in 21 patients, 19 males and 2 females, the youngest being 17, and the oldest 56 years. The time during which the patients received the adrenal exclusively varied from one to 6 weeks, 10 being obliged to discontinue the tablets, after a week's trial, on account of disagreeable symptoms. Several used them continuously, for 6 weeks, and in 4 it was administered at irregu-

lar intervals; but at least one tablet daily from 2 to 3 weeks. He regards the tablet as the best form in which to employ it, all patients beginning on one 5-grain tablet, every 2 hours; and in those in whom this amount produced unpleasant symptoms the dose was reduced by half. Doses of from 15 to 75 grains were given daily without the production of any untoward symptom, but, at the same time, without much appreciable benefit to the hay fever. In some cases, it appeared to increase the tendency to asthma. Better effects are obtained when the tablet is allowed to dissolve on the tongue. If immediately swallowed, little or no appreciable results were obtained. Its effect upon the mucosa of the upper respiratory tract is practically nil, when swallowed; but when it is allowed to dissolve in the mouth, a slight action is observed. The untoward or disagreeable effects produced were nausea, a sense of chest constriction, and the development of asthma, or the augmentation of the paroxysm which was already existing. The nausea was slight, and rapidly disappeared. A sense of chest constriction was observed only in those with pre-existing asthma, or in those who developed it while under observation.

Although Dr. Somers does not recommend a long trial of the internal use of the drug in this affection, he considers its local employment of great value. When applied to the mucosa of the nose and pharynx, he says we can depend upon restoring the nasal respiration, diminishing secretion, and practically making the patient comfortable so long as the applications are continued. In conjunction with other measures suited to the individual case, Dr. Somers regards its local employment as the most satisfactory single remedy that we at present possess.

#### **On Cacodylate of Iron.**

GILBERT AND LEREBROULLET. "On Cacodylate of Iron." *Journal des Practiciens*, Sept. 1, 1900.

Cacodylate of iron may be obtained either from the interaction of cacodylic acid and the subcarbonate of iron, or by double decomposition between the soluble cacodylate of barium and sulphate of iron. Ferric cacodylate, thus obtained is an amorphous powder, gray, or brownish in colour, soluble in water, and reddening slightly litmus paper. It contains 45% of oxide of iron, and 32% of arsenic. Its toxic action is, however by no means so great as might be inferred from its chemical composition.

The writers have administered this drug, both by the mouth and hypodermically. When used hypodermically, the solution must be a weak one, as with stronger solutions indurated nodules are liable to occur, which may persist and be very painful. A three per cent. solution however is

well borne, and of such a solution from 2 to 3 cm. may be injected at one time. In one case only did general symptoms follow this mode of injection. No renal complications were observed. Hypodermic injections are not always convenient and practicable, and in such cases, the authors have administered the ferric cacodylate in water, after the two chief meals. In almost all the cases the drug gave rise to no untoward symptoms, but in a few instances, the patients complained of gastric pains. The strong garlicky odor of the breath so frequently resulting from the use of sodium cacodylate, does not appear to have been noticed; nor was there any indication of renal irritation.

The doses employed varied from 15 to 25 centigrams (2-4 grains) *per diem*, but the hypodermic method is recommended as distinctly more effective than its administration by the mouth. Very excellent results are stated to have been obtained from its employment in chlorosis. One case is mentioned by these writers, of more than 4 years' standing, which had resisted other methods of treatment, and in which the red blood corpuscles rose, in 20 days, from 1,725,000 to nearly 3,000,000, and the hæmoglobin from 35% to 60%.

#### **On the Value of Formaline as a Disinfectant.**

The value of formaline as a disinfectant is discussed in an editorial article, *British Medical Journal*, December 1st, 1900. The writer states that it has been claimed by many experimenters that the gas possesses considerable penetrating power; and time appears to have been wasted, in demonstrating that such a claim is exaggerated. As Dr. Kenwood has pointed out, the specific gravity of formic aldehyde is about the same as that of the atmosphere; and it therefore diffuses more readily than either sulphurous acid or chlorine; but to expect it to penetrate through several thicknesses of closely folded blankets, at the current temperature and pressure of the room, is to expect a physical impossibility. No gas, under these conditions, can ever effect much more than surface disinfection; and the numerous bacteriological experiments which have been performed, to ascertain if the gas possessed such powers of penetration, were unnecessary. Recently, Dr. M. J. Roseman, Director of the Hygienic Laboratories in the United States Hospital, Marine Service, in a series of carefully executed experiments, tested the value of the method of a formaline disinfection, largely practised in America; a method which consists in sprinkling formaline (a 40% solution of formic aldehyde) upon the upper layers of infected clothing, placed in trunks; or pouring some on to absorbent material placing this in the corners of a trunk. This he finds by no means invariably successful, and increasing the time of exposure beyond 24 hours



does not increase its efficiency. The evaporation of a solution in a closed container is slow and uncertain, owing to the fact that formic aldehyde is given off at ordinary temperature from its aqueous solution, in very small amounts.

Abba, (*Centralblatt für Bakteriologie*, Band XXVIII, nos. 12 and 13), as a result of experiments to test the value of formaldehyde as a disinfectant for rooms, states that it is not to be relied on, when there is much perceptible dust in the room. It does not penetrate bedding; it requires at least 10 hours, for each room, and in cases where ventilation is difficult, the rooms are not inhabitable for 24 hours. He concludes that on account of the variability and inequality of its effects, it cannot be considered as an efficient disinfectant, for general use.

### **The Value of Glycerine as a Medium for Antiseptics.**

VON WANSCHHEIM, "The value of glycerine as a medium for antiseptics." *Wiener Klinische Wochenschrift*, July 26, 1900.

Glycerine has some definite disinfecting power, both when pure, and when moderately diluted with water. Although less than 30 per cent. glycerine has no effect on the bacterium coli, or the staphylococcus aureus, 50% to 70% glycerine kills the staphylococcus more quickly than pure glycerine. Owing to this distinct antiseptic action of its own, it would appear, theoretically, to be an excellent medium for the employment of other antiseptics. Practically however, this is not the case. With three exceptions, all the substances used in the writer's experiments, developed a much feebler antiseptic power, when diluted with glycerine than when mixed with water. This statement applies to solutions of sulphuric acid, oxalic acid, carbolic acid, creolin, lysol, tannin, and thymol. The three exceptions to this rule are glacial acetic acid, which has the same bactericidal power with glycerine as with water, and acetone and hydrochloric acid, which are more powerful bactericides, when mixed with glycerine than when diluted with water. The addition of glycerine to antiseptic soaps likewise lessens greatly their antiseptic value. Thus, a 10% solution of soft soap in pure glycerine, to which 5% of carbolic acid is added, requires 30 minutes to destroy the staphylococcus; while a solution made with soap and water, instead of water and glycerine, requires only five minutes. 2½% and 5% solutions of carbolic acid and glycerine have no antiseptic action whatever.

It is a remarkable fact that the addition of water to solutions of carbolic acid in pure glycerine increase their antiseptic power; so that 5% solution of carbolic acid in pure glycerine becomes efficient, when it is reduced to a 2½% solution, by the addition of an equal quantity of water. A 10% solution in glycerine, however, has the same value as one of an



equal strength in water. Carbolic acid, therefore, when used as an antiseptic, should not be mixed with pure glycerine in concentrations of less than 10%. If less concentrated solutions are required, the glycerine should be diluted with an equal quantity of water.

A. D. Blackader.

### **Jaborandi and Its Alkaloids.**

JOWETT AND MARSHALL, "Jaborandi and its alkaloids." *British Medical Journal*, Oct. 13, 1900.

Jowett finds in the leaves of the *Pilocarpus pennatifolius* and the *Pilocarpus microphyllus* varying amounts of pilocarpin and isopilocarpin but no jaborin. Pilocarpidin is found only in the leaves of true jaborandi, now very rare.

Pilocarpin and, to a less extent, isopilocarpin, which is a derivative of pilocarpin, represent the physiologically active principles of the plant. The jaborin of commerce is found to consist of coloring matter with a small amount of the above mentioned alkaloids and has only a mild pilocarpine effect.

Various specimens of Ext. Jaborandi Liquidum (B.P.) were tested physiologically and found to vary greatly in their physiological activity.

The authors consider these extracts so variable in their strength that they advise their complete abandonment by the clinician and recommend the use of the alkaloid in the form of its nitrate, a stable salt fairly soluble (1 to 7) in water.

J. T. Halsey.

## Clinical Therapeutics.

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### On the Cause and Cure of Insomnia.

Sir James Sawyer, M.D., F.R.C.P., *British Medical Journal*, December 8, 1900, in a course of lectures on the treatment of insomnia, advises the physician to study, as far as he may be able, the particular causation of insomnia, and endeavour to remedy that rather than resort at once to the assistance of hypnotics. Such drugs are only to be given in exceptional cases. The successful treatment of a case of sleeplessness as a rule follows from the discovery of its cause. The writer groups the different varieties of intrinsic insomnia into three classes: Psychic, toxic, and senile. In the psychic group, undue cerebral activity is the primary vice, and its subjects are mostly men of the so-called nervous temperament. In the toxic variety, the cause of the sleeplessness acts primarily upon the blood-vessels of the brain, inducing an arterial hyperæmia. Tobacco, alcohol, tea and coffee are the external poisons which most frequently give rise to insomnia; the internal, or autogenetic poisons which produce this effect are the waste products of tissue metamorphosis, so apt to accumulate in the bodies of gouty persons, or those whose kidneys are inadequate. Senile insomnia is mainly, if not entirely, the result of the senile degeneration of the smaller cerebral arteries. They have lost their resiliency and contractility, and are not able to adapt themselves to the conditions necessary for normal healthy sleep. This condition of lack of resiliency, however, is largely counteracted by the cardiac feebleness, which so often exists as a conservative lesion.

In the severer forms of psychic insomnia, it may often be necessary to secure sleep for a short time by the action of an efficient hypnotic. Acute insomnia, dependent upon some sudden mental shock or strain may often thus be relieved; and a few nights of sound and sufficient sleep, artificially induced, will do more than anything else to restore to the brain the power of sleeping without further aid from drugs. Great caution, however, should be used in the exhibition of hypnotics. Many human lives are yearly lost, as a consequence of overdoses of hypnotics taken by sufferers from insomnia. It is to be remembered that all drugs which produce sleep as a physiological effect, and the relief of insomnia as a therapeutic action, with the exception perhaps of the bromides, produce stupor rather than sleep in overdoses; a stupor which deepens into the sleep which knows no waking when taken in larger doses still. One important point must not be overlooked; an overworked man or woman must never

be permitted to go on with their overwork and habitually secure sleep by the use of hypnotics. In such cases, we must relentlessly aim at preventing the sleeplessness by removing its cause, rather than pursue the illogical and dangerous course into which a patient would often persuade us, of permitting that cause to continue, and of trusting to medicine to counteract or suppress one of its effects. Whatever the cause of insomnia a holiday with complete change of scene, and with distinct change of activities will often do much to cure. Great, however, as is the curative influence of new surroundings and new outlets for energy, psychic insomnia will often demand the use of drugs. Potassium bromide is by far the best hypnotic in well nourished patients, and in the slighter cases generally. It is a direct and quite safe brain sedative; but it must be given properly and in full doses, 30 to 60 grains, dissolved in sufficient water, taken after getting into bed. In many cases of chronic wakefulness, arising from prolonged mental strain, the patient is distinctly anæmic. The insomnia cannot be cured, unless this condition be cured. Such a person generally feels drowsy when he is up, but becomes wakeful as soon as he lies down. Such a one requires hæmatinics, and his diet should be generous. In these cases, alcohol is often the best hypnotic, as it gives, perhaps better than any other drug, rest and sleep to the wearied brain of persons whose blood is poor. In almost all cases of chronic psychic insomnia, when the patient is worried and weakly, sorrowful, and anæmic, alcohol properly employed will be of the greatest service. We need not exaggerate our responsibility in thus prescribing of alcohol, but we should never forget it, and we should explain to our patient the reasons for employing the remedy, and direct that the remedy is to be discontinued when the conditions, which called for its exhibition, have disappeared. Among the important details to receive attention in such cases, Sawyer insists that the patient go to bed and get up at fixed and regular times. Lying in bed in the morning is not a remedy for insomnia. Daily bodily exercise in the open air always short of great fatigue must be enjoined. Among adjuvants that may occasionally be used are the various methods employed for changing the current of conscious cerebration. To try hard to go to sleep is often the surest way to keep awake. We do many things best, when we forget ourselves; and going to sleep is no exception to the rule. Binz, quoted by the late Dr. Pereira, recommends the taking of deep inspirations, a plan which may be of service in promoting the sleep of a person in bed. The bedclothes which cover the patient should be sufficient, but not excessive. He must neither feel chilly, nor must the body be overheated. In all cases the bedroom window should be open all night and all the year round, but arrangements should be made so that there be no draught over the patient. The head of the bed is better away from the wall, and the best bed on which to lie is a hair

mattress covered with a sheet and a blanket and supported upon a chain stretcher. In some cases, a little food, taken just at the time for sleeping, is an efficient soporific. Sleep may sometimes be induced by the temporary application of cold to the head or to the general surface of the body. A patient who has been lying awake will often fall asleep at once, on regaining his bed, after sousing his head, neck and hands in cold water; or after following Charles Dickens's plan of standing at his bedside until he feels chilly, then shaking up and cooling his pillows and bedclothes, and again getting into bed.

In toxic insomnia, a special endeavor must be made to act on the maxim, *causante causa cessate et effectus*. We must stop or lessen the consumption of tobacco, alcohol, tea, etc., as the case may be. Gouty insomnia, and the sleeplessness arising in some chronic kidney diseases involves a consideration of the whole question of the therapeutics of the maladies upon which these forms of wakefulness depend.

Senile insomnia is very obstinate. Perhaps in the bromides, with full doses of hops or henbane, we have the most efficient and least harmful medicinal means of relieving such, while the promotion of sleep may be accomplished by an intelligent combination of some of the non-medicinal measures to which reference has been made.

#### **On the Treatment of Paralysis Agitans.**

DR. R. T. WILLIAMSON. "On the Treatment of Paralysis Agitans."  
*Medical Chronicle, Feb., 1901.*

In a very excellent article on the subject of paralysis agitans, Dr. Williamson states that he has tried carefully a large number of drugs which have been recommended by various writers, and has in many cases pushed them until even toxic symptoms have appeared, but, in the majority of instances has not observed the slightest benefit. He mentions among the drugs that he has thus employed but found useless, arsenic, quinine, potassium iodide and bromide, strychnine, cannabis indica, caffeine, nitroglycerine, chloral hydrate, and chloretone. The drugs which in his hands have proved of most benefit in the palliative treatment of this affection are hyoscyne hydrobromate, and its congeners, duboisine sulphate, and hyoscyamine. Hyoscyne hydrobromate he has found most useful. Although recommended some years ago by Erb, of Heidelberg, little reference is made to it in recent accounts of this affection in English medical literature; a few writers indeed have stated that they have not found it of any service. Although Professor Erb recommended the drug to be used hypodermically Dr. Williamson generally ordered it in pill form in doses of from 1-200 to 1-150 of a grain to be taken three, afterwards four times a day for long periods.



In some cases the best results were only obtained when the drug was given in solution in chloroform water, and the amount increased to 1.75 and even 1.50 of a grain. Such doses of course should be given with great caution and only arrived at very gradually. Though the tremor is not arrested by these doses it is undoubtedly diminished, and the general restlessness, such a troublesome symptom of the disease, is lessened. Sleeplessness is often a troublesome symptom of paralysis agitans at an advanced stage, and one point of practical value is that the bed should not be too soft. For the troublesome pains in the limb antipyrine or phenacetin are sometimes of service.

### **The Value of Camphor as a Stimulant in Typhoid Fever.**

DR. STENGEL. "The value of camphor as a stimulant in typhoid fever."  
*Therapeutic Gazette*, Nov. 15, 1900.

Dr. Stengel urges the claims of camphor as a cardiac stimulant in typhoid fever, and says it is of value for the maximum stimulation which is required to combat the depression resulting from diarrhoea and tympanites. In such cases after alcohol has been pushed to the limit of safety and strychnine has been administered as freely as seems advisable, injections of camphorated oil, as advocated by Von Ziemmsen, will be found to be of much value. One grain of camphor dissolved in fifteen minims of sterile olive oil, may be injected under the skin, without pain and with rarely any unpleasant after results, such as indurations or abscesses. The oil is quickly absorbed and the stimulation is prompt and continuous. As much as one or two grains every second hour may be given for several days, but as a rule the interval between the injections should be four hours. The drug commends itself particularly on account of the quieting effect on the nervous system. It is also of service in those cases in which obstinate hiccough has occurred, and several times this same symptom in diseases other than typhoid, has yielded to injections of camphorated oil, when other remedies had failed.

### **Bromides in the Treatment of Epilepsy.**

DR. H. A. HARE. "To increase the effectiveness of Bromides in the Treatment of Epilepsy." *Therapeutic Gazette*, Nov. 15, 1900.

Dr. H. A. Hare recommends that an endeavor should be made to render the body more sensitive to the action of the bromides by withdrawing the chlorides from the diet. It is generally held that about 200 grains of salt is required by a man of average weight every day, and that at least 35 grains should be provided, though he may not

thrive on this. If the diet is made to consist of milk, eggs, meat, meal, and potatoes the amount of chlorides obtained is but small. The patient is thus starved of this article of food. If the bromides are then administered, Toulouse asserts as much as 60 grains of bromide of sodium given each day, will cause a great decrease in the number of attacks, and this amount may afterwards be cut down to 30 grains daily. It is believed that the most active forms of epilepsy are especially amenable to this treatment, and in these if it be necessary to cut the quantity of salt down to the lowest possible measure, an absolute milk diet may be insisted upon. Such limitation of the iodium chloride however cannot be continued over a long period in consequence of the danger to nutrition; but it may be useful in specially selected cases when it is necessary to produce rapidly a bromide influence.

#### **On the Treatment of the Pyrexial State.**

Among the papers presented to the 13th International Congress, in Paris, was one by M. A. Robin, on the treatment of fever. Mr. Robin considered that this should be based upon the study of metabolism in the patient. Two types of pyrexia were to be recognized. 1st, the simple, where oxidation and respiration were increased, and 2nd, the grave, the result of severe intoxication, where oxidation was diminished, and dissimilation increased. In fever of the first type, antipyretics, the controllers of oxidation, were indicated. In the second type, however, these drugs were injurious. Here three indications existed. First, the phenomenon of disintegration should be diminished, by the use of certain antipyretics, such as quinine, if given in small doses,  $7\frac{1}{2}$  grains to 9 grains, daily. Large doses would have the opposite effect. Second, oxidation should be encouraged by aëration, the inhalation of oxygen gas, the drinking of large amounts of fluid, and by hydrotherapeutics. Third, the excretion of waste products must be facilitated, and their retention prevented. For this purpose, it was necessary that they should be soluble. The author thought that by the administration of salicylic and benzoic acids, soluble glycocholl was converted into the soluble salicylate, salicyluric acid and hippuric acid, which were easily eliminated from the urine.

*A. D. Blackader.*

## Pathology.

UNDER THE CHARGE OF J. GEORGE ADAMI.

### Cirrhosis of the Liver.

MAUDE E. ABBOTT, M.D. "Pigmentation Cirrhosis of the Liver in a Case of Hæmochromatosis." *Trans. Path. Soc. London, Vol. LI., Pt. 1, 1900.*

This paper is a very full study of a case of this very rare condition which was brought before the Montreal Branch of the British Medical Association in May, 1898, by Drs. Stewart and Adami, a case which was the first of its kind observed in America, and indeed the first recorded as occurring in a female.\*

Hæmochromatosis is a condition of pigmentation of various organs of the body and of the skin, first studied as an entity by Von Recklinghausen in 1889, the pigment being iron-containing and in fact hæmosiderin. Advanced cases show, almost without exception, an extensive cirrhosis of the liver with great pigmentation of the organ and in addition to this, a condition of chronic interstitial pancreatitis with diabetes. In fact the cases of "Diabète Bronzé" of French writers are cases of this condition.

Now the ætiology of these three conditions, cirrhosis, diabetes and hæmosiderosis, is alike obscure and it is well worth asking whether the one condition be dependent upon the other or whether all are due to the action of one common cause, and Dr. Abbott, in her study of the case in question, brings forward observations and evidence which materially advance our knowledge in the causation of at least one of the conditions, namely, the hæmochromatosis. The patient, a woman of 50, was admitted to the Royal Victoria Hospital under Dr. Stewart in July, 1897, and her history was rather characteristic. For more than 10 years she had been in the habit of taking a glass or two of gin—undiluted—daily, though of late the gin had been replaced by beer. For years also she had been in the habit of drinking a mixture of vinegar and soda two or three times daily. It is not surprising that with this history for two years previous to admission there had been symptoms pointing to gastric irritation, with pain and vomiting at intervals. Upon admission the skin had a dark bluish or slaty color, the color was so characteristic that she

\* While Dr. Abbott was engaged in studying this case Dr. T. Opie, of Baltimore, published an admirable study of another case in the *Journal of Experimental Medicine*, Vol. 4, 1899.

was known throughout the hospital as "Blue Mary." There were physical signs pointing to effusion into both pleural cavities; there was cough with scanty brown sputum, and frequent vomiting after meals, while in the epigastrium could be felt a firm hard mass having a rough or convex surface with well defined borders. The movements of this mass were synchronous with those of the liver. The spleen was considerably enlarged and there was frequent epistaxis. The urine presented at no time abnormal characters save an occasional trace of albumin; sugar, although frequently tested for, was never found present. The diagnosis made was, doubtfully, either malignant disease of the liver with secondary pigmentation, hepatic cirrhosis, or disease of the head of the pancreas with adhesion to the liver.

In April, 1898, she suddenly became worse, passed into a semi-stuporose state and died on the following day. The cause of death was found to be hæmorrhage from the varicose submucous veins of the œsophagus. The liver was found to be the seat of a very extensive cirrhosis with abundant adhesions to the diaphragm; the organ presented everywhere small lobular islands of dirty yellowish color surrounded by bluish-grey fibrous tissue. The spleen was relatively enormous and the pancreas showed a fairly advanced condition of interstitial pancreatitis. There was mixed nephritis and pigmentation of the stomach and intestines.

In studying this case Dr. Abbott points out, following Kretz, that a certain amount of hæmosiderosis is common in conditions of cirrhosis. Among 16 cases of cirrhosis examined by her from material at the Royal Victoria Hospital, she detected the condition 6 times. On examination of other livers, not cirrhotic, she found in all cases a history of localised blood disintegration either in the form of hæmorrhage or chronic sup-puration, together with, in all cases a history of some intestinal disturbance. Indeed, as she points out, what is common in all these cases, is the evidence of more or less chronic intestinal disturbance. Hintze has pointed out that the earliest stage of recognisable hæmochromatosis is that in which the walls of the small intestine alone are involved.

She suggests the following conclusions:—

1. In general hæmochromatosis some primitive agency, as yet unknown, is at work leading to (*a*) an increased destruction of hæmoglobin, either in localized hæmorrhages or within the blood stream—or perhaps sometimes within the parenchymatous cells themselves—and (*b*) a degeneration of the cells of certain organs in which they become unable to throw off the granular pigment deposited in them, and becoming loaded, finally disintegrate.

2. The cirrhosis would seem to be of the nature of a chronic interstitial inflammation secondary to the presence in the tissues of pigment set free after the destruction of the parenchymatous cell.



3. Hæmosiderosis is observed in her case, as in many in the literature, to be associated with the history of intestinal disturbance and at times a prolonged suppuration.

These facts suggest that the primitive agency leading alike to blood destruction and cell degeneration may be bacterial in its nature.

### **Obstructive Biliary Cirrhosis.**

W. W. FORD, M.D., D. P.H. "Obstructive Biliary Cirrhosis." *Amer. Journ. of Medical Sciences*, January, 1901.

Obstructive biliary cirrhosis was only established as a distinct pathological condition in 1874 by Wickham Legg, and the observations of Charrot in 1876 caused the existence of the condition to be generally recognized. Experimentally, as pointed out by Legg and previously by Wyss in 1866 and by Meyer in 1872, closure of the common bile duct in animals leads to the development of the condition of cirrhosis. In 1882 Mangelsdorff of Leipsig collected together various cases of cirrhosis and was able to report 184 cases due to obstruction of the biliary passages. He concluded that no particular variety of cirrhosis may be said to be dependent upon disease of the bile passages, that practically any condition of fibrosis of the liver can follow obstruction of the ducts. It is rather remarkable that while in eight years, 1874 to 1882, Mangelsdorff was able to collect such a large number as 184 cases, in the literature since Mangelsdorff's paper appeared, that is to say, from 1882 to 1900, Dr. Ford, although he made the fullest use of his opportunities to study in the Surgeon-General's Library at Washington, only came across 21 distinct cases of cirrhosis of the liver due to obstruction of the bile passages. Evidently the observations of Legg and Charcot had called especial attention to this form during the years immediately following their publications, for to these 21 cases Ford was able to add 3 cases taken from the records at the Royal Victoria Hospital—in other words, the condition is much commoner than is indicated in the literature.

Dr. Ford gives a full study and analysis of these 24 cases.

The causes of obstruction are: (1) Congenital deficiency of the bile ducts; this is the most frequent cause of complete obstruction, the infants usually dying at the age of 6 or 8 weeks with the liver enormously enlarged and profound jaundice and cachexia. (2) Gall stones; this stands next in order of frequency and according as the flow of bile be partially or entirely cut off so was there found either an interlobular cirrhosis of moderate extent, or the more advanced stage of the condition. (3) Cancer of the head of the pancreas and (4) enlarged glands at the hilus of the liver are rare causes of the condition.

Dr. Ford is inclined to regard the presence of new bile ducts or otherwise, strands of degenerated liver cells forming a wreath around the

larger old bile ducts and surrounded by a considerable amount of fibrous tissue, as characteristic of at least the early stages of the condition. He points out that in the lower animals, as shewn by Vaughan Harley, the cirrhosis is not associated with infection, it is purely the result of obstruction and of an irritation of the tissue immediately around the bile ducts. He doubts whether in man there is not always a certain amount of accompanying infection, or what indicates infection, namely a moderately acute inflammation. While anatomically the type of the cirrhosis of the liver seen in man cannot, save possibly in the earlier cases, be differentiated anatomically from the type of liver seen in Hanot's hypertrophic cirrhosis with jaundice, nevertheless the symptom complex of obstructive cirrhosis is so absolutely different from Hanot's cirrhosis in the variety of its symptoms and in the frequency with which they occur, as to justify the statement that obstructive biliary cirrhosis is a distinct morbid condition and quite apart from any other variety of cirrhosis of the liver.

He gives the following valuable table of the clinical distinctions between Hanot's and obstructive biliary cirrhosis:—

|                                  | HANOT'S CIRRHOSIS.           | OBSTRUCTIVE CIRRHOSIS. |
|----------------------------------|------------------------------|------------------------|
| <i>Course of Disease.</i>        | Chronic.                     | Acute.                 |
| <i>General Health.</i>           | Good.                        | Poor.                  |
| <i>Emaciation.</i>               | Slow.                        | Rapid.                 |
| <i>Loss of Weight.</i>           | Slow.                        | Rapid.                 |
| <i>Intermission of symptoms.</i> | Common.                      | Does not occur.        |
| <i>Fever.</i>                    | Common.                      | Rare.                  |
| <i>Anorexia.</i>                 | Rare.                        | Common.                |
| <i>Good Appetite.</i>            | Common.                      | Rare.                  |
| <i>Vomiting.</i>                 | Rare.                        | Common.                |
| <i>Jaundice.</i>                 | Slight at first, increasing. | Deep from the first.   |
| <i>Clay-colored stools.</i>      | Rare.                        | Constant.              |
| <i>Bile-stained urine.</i>       | Common.                      | Constant.              |
| <i>Enlargement of Liver.</i>     | Common.                      | Common.                |
| <i>Contraction of Liver.</i>     | Rare.                        | Common.                |
| <i>Ascites.</i>                  | Rare.                        | Common.                |
| <i>Edema of Extremities.</i>     | Rare.                        | Common.                |
| <i>Caput Medusæ.</i>             | Rare.                        | Common.                |

## Reviews and Notices of Books.

✓ THE ANATOMY OF THE BRAIN. A Text-book for Medical Students. By RICHARD H. WHITEHEAD, M.D. Professor of Anatomy in the University of North Carolina. Illustrated with forty-one engravings. \$1.00. The F. A. Davis Co., Philadelphia.

This small monograph is intended to supply the growing want of up-to-date anatomical knowledge of the central nervous system. There is confessedly no part of human anatomy so puzzling as this, and the great strides that have been constantly made in brain surgery as well as in clinical work in diseases of the nervous system make it necessary for every progressive practitioner of medicine or surgery to possess a work of this kind, giving, as it does, the latest and most approved nomenclature as well as a profusion of illustrations showing the mode of development and the ultimate anatomical construction of the central nervous system. The explanatory text has the merit of being concise and at the same time sufficiently descriptive for the reader to acquire a clear understanding of a subject which many of us have been in the habit of regarding as hopelessly involved and incomprehensible. The author is certainly to be congratulated on the success of his undertaking.

✓ DISEASES OF THE NOSE AND THROAT. By J. PRICE BROWN. Illustrated with 159 engravings, including six full-page colour plates and nine coloured cuts in the text, many of them original. Philadelphia, New York and Chicago, The F. A. Davis Company, 1900.

The author, in preparing this work for the student in medicine and the general practitioner, is to be congratulated upon the results of his labour. The subjects are presented in a very readable form and are generally in keeping with the views of the present day. The reviewer, however, differs from the author in several points. In the first place, it seems extraordinary that diseases of one of the most important of the accessory cavities of the nose, the frontal sinuses, should not be discussed but delegated to the oculist. Why work which properly belongs to the rhinologist should be undertaken by the oculist is hardly explained by the author in his preface. It is quite true that many advanced cases of disease of the frontal sinus may produce symptoms which may involve the eye and orbit; but how much more frequent are those cases which only produce only nasal symptoms which demand proper attention; and who ought to be thoroughly capable of recognising these lesions and properly treating them but those doing rhinology?

The subject of deformities of the nasal septum does not include Ash's operation, which is now so frequently performed in proper cases with such satisfactory results. In the treatment of epistaxis a remedy which is used frequently and with considerable satisfaction, supra-renal capsule, is not mentioned.

Then again there is an entire omission of diphtheria from the work, and it seems strange to omit a description of the symptoms, for the relief of which an operation (intubation) is described. It hardly seems consistent to describe an operation for the relief of the symptoms of a disease of which no mention is made.

In the subject of spasm of the glottis no mention is made of the status lymphaticus as a cause.

The publishers are to be congratulated on the printing, colour-plates and cuts.

H. S. B.

A TEXT-BOOK OF DISEASES OF THE NOSE AND THROAT. By D. BRADEN KYLE, M.D. Philadelphia, W. B. Saunders, 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$4.00. ✓

In this work we have diseases of the nose and throat presented in an entirely novel and interesting manner, being arranged "according to the pathological alterations caused by them." The work itself in all its details is a result upon which the author is to be congratulated, and it will be found very useful not only to the general practitioner, but the specialist also will find it a capital book of reference.

Interest is added to the book by the articles of Dr. Keen, in which his own method of dealing with diseases of the larynx requiring surgical interference are fully described. The various subjects under consideration are fully elucidated and the treatment thoroughly dealt with.

The coloured plates and electrotypes are exceptionally good, and the *tout ensemble* of the work reflects great credit upon the publishers.

H. S. B.

A MANUAL OF PRACTICAL HYGIENE. By CHARLES HARRINGTON, M.D. Professor of Hygiene, Harvard University Medical School. Philadelphia, Lea Brothers and Co. 1901. Price, \$4.25. ✓

Dr. Harrington has succeeded in writing a book specially well adapted for the needs of advanced students in hygiene and for those graduates who are making a special study of the subject. At the same time the style is clear and simple and the treatment of the topics dealt with makes it suitable as well for medical students and general practitioners. The chief drawback to its use as a general text-book appears to be that the general subject of infectious disease in relation to hygiene receives rela-



tively little attention, though disinfection and quarantine receives very thorough treatment.

The sections on food and on laboratory methods are better treated than in any of the existing works on hygiene, this part of the book having the completeness of a monograph.

Apart from a few minor errors and omissions, we have nothing but praise for the book, with the proviso that, to obtain a complete survey of the subject, an additional work, such as Abbott's Hygiene of Transmissible Diseases, becomes necessary, and this will probably interfere considerably with its general use as a text-book by the numerous class of readers whose library on the subject of hygiene is limited to a single volume.

W. J.

AFFECTIONS CHIRURGICALES DU TRONC. Mamelles et Organes Génitaux de la Femme. Statistiques et Observations. Par le Dr. POLAILLOX, Chirurgien Honorairre de l'Hotel Dieu, Professeur Agrégé a la Faculté de Médecine de Paris. Paris, Libraire Octave Doin, Editeur. 1901.

The author is issuing a series of volumes on surgical subjects. This present volume is that devoted to female sexual organs, including the breasts. He does not profess in these volumes to give the profession a treatise on surgery in the ordinary sense, but rather the record of a large personal experience during twenty years in the great hospital with which he is connected. He therefore says that the book is not a treatise on gynæcology, "mais un receneuil de faits complétés par les reflexions d'un clinicien."

The first eighty-six pages are devoted to diseases of the breast and comprise an experience of 446 cases. Of these ten were in the male sex. The number of operations done was 360. In this section, as all through the work, the author gives the whole of his experience in numbers, while illustrative cases are briefly recorded, and the results favourable and otherwise candidly set forth, for as he remarks in his preface, "il est moins utile de connaitre les succès que les insuccès et les fautes qu'il faudra eviter."

The subsequent portion of the volume is devoted to the genital organs and embodies a large experience of the whole range of gynæcology. In the light of modern American procedure, some of the author's methods are decidedly antiquated. If, for instance, we take the great question of the surgical treatment of uterine myoma, we find that he adheres to the old method of extraperitoneal treatment of the pedicle by constriction with elastic ligature and supporting pins. We are not, therefore, surprised to hear of a mortality of 43 per cent., and in those cases that

recovered of a number of annoying complications during convalescence and subsequent ventral hernias. Polaillon, however, admits that in future he will practice the intraperitoneal treatment of the pedicle. He nowhere speaks of having done the conservative operation of myomec-tomy.

In the treatment of metritis, acute and chronic, of infective origin, such as follows abortion or labour, attended with profuse leucorrhœa and menorrhagia, the author is a strong advocate of a method of treatment, which, so far as we know, is little if at all practiced out of France, and probably, so far as our knowledge of this literature enables us to judge, very little even in that country. This is by the introduction into the uterine cavity of crayons of chloride of zinc paste. Our experience of this agent would lead us to dread excessive action, if not complete destruction of the uterine mucosa. The author admits this danger, and insists on the necessity of experience and judgment. He recommends it especially in hæmorrhagic cases after abortion and others. He relates two cases of intractable uterine hæmorrhage, in which without result the curette had been repeatedly employed, but which yielded to four successive applications of the chloride of zinc paste, the cavity of the uterus being obliterated. By most gynecologists such a case would probably be treated by extirpation of the uterus with very little greater risk to life. Seven cases of infective puerperal endometritis of grave character with high temperature were treated with the chloride of zinc crayons. All recovered, and the author gives a composite temperature chart showing rapid defervescence.

The volume is illustrated by reproductions of a number of drawings of perhaps indifferent value. It is the honest record of the total experience of twenty years of a wide hospital experience in which mistakes, failures, and disasters are all set forth with equal clearness as successes. Would that many more such works were written and replaced the flood of compilations to which we are constantly being treated.

W. G.

PANAMA AND THE SIERRAS, A DOCTOR'S WANDER DAYS. By G. FRANK LYDSTON, M.D. Illustrated from the Author's original photographs. The Riverton Press, Chicago. 1900. ✓

In these pages the author, a well-known Chicago medical man, in a series of sketches, humorous and fanciful, describes the scenes and incidents of a holiday trip. He resolved to revisit California, the land of his birth, which he had left as a boy. Consequently, leaving New York by steamer, he sailed to Colon, crossed the Isthmus by rail to Panama, whence by a coasting steamer he reached San Francisco. The ship called at all the principal ports along the coast and remained long

enough to allow an opportunity to get a glimpse of each. The author has improved his opportunity in a series of very interesting descriptions.

In California he revisited many scenes of mining camps and villages with which he was familiar in his boyhood, and his records afford numerous illustrations of the many uncertainties of gold mining. Some of Dr. Lydston's readers who have invested in gold mining stocks but have never visited gold mines, and still less been practical miners, know a good deal about such uncertainties. To prospective investors in mining shares the author gives this advice:—"Go and look at that hungry hole in the ground before you put your money into it. Having looked, go home and rent a box in a safety-deposit vault and lock up your funds therein."

We know of no better book than this to recommend to the tired doctor for an hour's light and amusing reading after a hard day's work. Some of our Montreal readers will doubtless be interested in the quotations from the book by our old friend and former townsman, Dr. Wolfred Nelson, entitled "Five Years at Panama."

The illustrations of Dr. Lydston's book for the most part add much to its interest, but we question the taste which lead him to include "the necktie party," a reproduction of a photograph of four men hanging, the work of a Vigilance Committee.

W. G.

**A SYSTEM OF PRACTICAL THERAPEUTICS.** Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia, Physician to the Jefferson Medical College Hospital. 2nd ed., revised and largely rewritten. Vol. I. Lea Bros. & Co., Philadelphia and New York. 1901. Price, \$5.00 per volume.

This system has been prepared with the view of presenting to the general practitioner what is known of the best methods of treating disease.

The first edition, published nearly ten years ago, met with a warm reception from the medical press. The present edition has undergone a most complete revision, more than half of the articles being entirely new. The volume opens with a chapter on general therapeutic considerations, by Prof. H. C. Wood, and contains articles on preventive medicine, and on the treatment of diathetic and nutritive diseases. Among the more important contributions we would mention one on nutrition and foods, by Dr. Burney Yeo, of London; one on the rest cure for neurasthenia and hysteria, by Dr. John K. Mitchell; one on hydrotherapy, by Dr. Simon Barach; and one on disinfection, by Dr. Coplin. Electrotherapeutics is treated by Dr. Rockwell, climate by Dr. Solly, and mineral waters in their medicinal uses, by Dr. Crook. Among the diathetic diseases noticed we have read with much pleasure the article on chronic



articular rheumatism and gout, by Dr. James Stewart; on diseases of the blood, by Dr. Ralph Stockman, of Edinburgh; and on tuberculosis, by Dr. Flick. We have very much pleasure in speaking in the highest terms of the value of this work to all engaged in the general practice of medicine, as affording a text-book which may very fairly be said to represent with completeness the practical aspect of the therapeutic art as it exists to-day.

*A. D. B.*

A MANUAL OF THE DISEASES OF CHILDREN. By JOHN MADISON TAYLOR, Professor of Diseases of Children at the Philadelphia Polyclinic; and WILLIAM H. WELLS. 2nd edition, thoroughly revised and enlarged. P. Blakiston, Son & Co., Philadelphia. ✓

The authors can very fairly claim to have presented in a clear and concise manner the chief points in the description, differentiation, and treatment of the diseases of childhood, special prominence having been accorded to treatment. The book forms an octavo volume of over 800 pages, and contains excellent chapters on the general hygiene of infants and children, and also general considerations on physical development, and conditions requiring surgical procedures. The work we are sure will prove of much value to students and physicians interested in this department of medicine.

*A. D. B.*

A MANUAL OF MODERN SURGERY. An exposition of the accepted doctrines and approved operative procedures of the present time. By JOHN B. ROBERTS, A.M., M.D., Professor of Anatomy and Surgery in the Philadelphia Polyclinic, etc. Second edition, revised and enlarged. Illustrated with 473 engravings and 8 plates in colors and monochrome Pp. 842. Philadelphia and New York, Lea Brothers and Co. Price, \$4.25. ✓

In these days of the many-volume treatise by many writers, it is a pleasure to meet with satisfactory work by a single writer, for, as the author of this work well says in his preface, "a volume from a single pen may be more equable in its teachings than a composite book from many minds." To embody in the space of a single volume of 814 pages an exposition of the doctrines and procedures of modern surgery was indeed a most difficult undertaking, but the author has very skillfully accomplished this end. It is true that he has at times sacrificed detail for the sake of brevity, merely mentioning that an operative measure should be undertaken without describing how it should be done. It may also be noticed that many names that are familiarly associated with methods of treatment have been omitted, a questionable advantage to the student



who may be required to possess this knowledge. Of the many excellent chapters, the one on Fractures is perhaps the best, this most important subject being dealt with in a very practical and comprehensive manner. The illustrations which are numerous, many being from the author's own cases, serve well to illustrate the text. Taken as a whole, this book is one of the best and most practical of the treatises on up-to-date surgery that have recently appeared.

**PULMONARY CONSUMPTION, PNEUMONIA, AND ALLIED DISEASES OF THE LUNGS:** Their Etiology, Pathology and Treatment, with a Chapter on Physical Diagnosis. By THOMAS J. MAYS, A.M., M.D., Professor of the Diseases of the Chest, Philad. Polyclinic, etc. E. B. Treat & Co., New York and Chicago.

This book has been written with the object of proving that pulmonary phthisis is, in the majority of cases, a neurosis, and as a consequence that all treatment should be directed to the nervous system.

A good deal of space is devoted to a collection of cases from the literature relating to the association of affections of the nervous system and phthisis, and on this and certain other facts the writer bases his views on the etiology of phthisis. A single page is devoted to the tubercle bacillus as an etiological factor in the disease. Whilst admitting the bacillus as an occasional factor in the propagation of phthisis, the author regards its efficiency in this respect as overestimated. The contagiousness of phthisis is rejected, and the value of the bacillus in the diagnosis is not even referred to. So far as we can see, tuberculin is not mentioned. We can hardly believe that the author is quite ignorant of existing views on the bacillary theory, but if so there is no serious attempt to refute them.

Treatment is discussed fully. In addition to the ordinary measures of rest, over-feeding and climate, great stress is laid on large doses of strychnine and injections of nitrate of silver over the course of the vagus nerve.

We cannot recommend this book as a reliable guide in affections of the lungs. Much of what is good has been better described elsewhere, and the failure of the writer to make out a good case for his theory takes away much of its *raison d'être*.

**THE INTERNATIONAL MEDICAL ANNUAL:** A Year-Book of Treatment and Practitioner's Index. E. B. Treat & Co., New York and Chicago.

This well-known annual has now attained its nineteenth year. The book is divided into two sections. In the first a short account is given of new drugs and their action, whilst the larger portion of the work is

devoted to the treatment of various conditions, medical and surgical, arranged in alphabetical order.

Although principally devoted to treatment, the annual gives a good deal of attention to pathology, and contains many useful hints in diagnosis. Some of the plates, especially those referring to the parasitic affections of the skin, are excellent.

As a ready work of reference this annual is of great value, and no practitioner can fail to benefit by a frequent reference to its pages.

A PRACTICAL TREATISE OF MATERIA MEDICA AND THERAPEUTICS, WITH SPECIAL REFERENCE TO THE CLINICAL APPLICATION OF DRUGS.  
By JOHN V. SHOEMAKER, M.D., LL.D. 5th ed., thoroughly revised. F. A. Davis Company, Philadelphia. ✓

This volume is said to be specially prepared for the use of students, and presents very fully the pharmacology and the therapeutic applications of all the drugs entering into either the British or the United States pharmacopœia. Prescriptions illustrating the mode of employment of the several drugs are very numerous and very complicated. We question whether the author himself could in all cases state the exact physiological action of some of his prescriptions. For this reason we should have preferred that in an edition prepared especially for students' use that simple illustrations should have been employed. In other respects we have no doubt the work will prove of value as a text-book for the medical student.

A. D. B.

PROGRESSIVE MEDICINE: A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMERY HARE, assisted by H. R. M. LANDIS, M.D. Vol. I., March, 1901. Lea Brothers & Co., Philadelphia and New York. Price, \$10.00 per annum. ✓

This volume includes a review of recent advances in our knowledge in the following departments: surgery of the head, neck, and chest; infectious diseases, including acute rheumatism, croupous pneumonia and influenza; diseases of children; pathology; laryngology; and otology. We have from time to time referred to the volumes of this most excellent review of the medical and surgical sciences, with much commendation. The present volume is in no wise behind its predecessors, and in our opinion this practical review is one of the most useful works that the medical practitioner can possess. The information is very carefully collated and placed in the most interesting and practical manner before the reader.

A. D. B.

## Society Proceedings.

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### MONTREAL MEDICO-CHIRURGICAL SOCIETY.

*Stated Meeting, March 8, 1901.*

JAMES PERRIGO, M.D., PRESIDENT, IN THE CHAIR.

Drs. George Hall and Hugh Lennon, of Montreal, were elected ordinary members of the Society.

#### **Suppuration of the Genito-Urinary Tract.**

DR. MACPHAIL showed a specimen, consisting of the genito-urinary organs from a man, which had been originally classified as belonging to the class of surgical kidney due to tuberculosis, but there was no evidence of the presence of tubercle bacilli in any part of the tract. The only organism found was a diplococcus in many respects resembling the gonococcus. The interesting point was the causation, the point of origin seeming to be the prostate gland. Suppuration had begun in the prostate and extended up to the kidney.

#### **Otomycosis.**

DR. H. S. BIRKETT gave the following report:—

The case which I wish to report this evening is commonly called otomycosis. It is not the clinical history which is of importance, but I will give a few facts. The patient, a woman 45 years of age, complained a good deal of an itching sensation in both ears with a moderate amount of deafness. On examination I found each auditory canal blocked with a black material lying on it, and extending from the meatus almost as far as the tympanic membrane, occupying chiefly the anterior wall. There were a few red spots on the surface of this, and it occurred to me that this was a mixed growth. Though mention in the literature of this subject is not uncommon, many observers having reported the red and yellow varieties, no definite cultures have been made in any case so far as I know. I therefore asked Dr. Johnston to investigate the matter and find out whether this was a mixed growth or not. It turned out to be the common *aspergillus nigricans*. Of other varieties Dr. Johnston may have something to say. Treatment consisted in the instillation of a saturated solution of boracic acid in alcohol. Six months later there was no reappearance of the growth and the hearing was considerably improved. The patient was suffering from a form of eczema at the time

and as this fungus grows more favourably on moist surfaces it may be that this proved a factor in its development.

DR. WYATT JOHNSTON said that the culture showed the characteristic appearance of the specimen at the time of removal. There were little heads projecting above the surface of the growth. The fungus was characterized by peculiar spreading-out rays on which the spores were arranged. It grew very rapidly on potatoe and, as far as he could make out, there was only one form of fungus although bacteria were present. With regard to the species he was a little uncertain. It appeared to correspond with *aspergillus nigricans*, but there were a number of different forms with very similar appearances. It did not appear to be the *fumigatus* as it was black at first and only got smoky afterwards, whereas the *fumigatus* followed the opposite order, becoming black last. He had tested the fungus on rabbits, and it produced little nodules which disappeared some months later. The fungus was found in fowls and often in dogs, more particularly in the spaces within the bones. An epidemic of this fungus in the bones of many of the fowls of one of the zoological gardens was on record.

#### **Ectopic Gestation with Subsequent Normal Pregnancy.**

DR. D. J. EVANS reported this case. See page 269 of the April number.

DR. SPRINGLE said that the patient had been under his care for some months previous to her marriage suffering from ovarian disease, but had apparently got well. She had come to him and asked him whether she had better marry, and been advised against doing so. Ten weeks after her marriage she had again consulted him, and she had then had all the symptoms of a ruptured tubal pregnancy, a mass being felt in the pelvis and a certain amount of discharge of decidua coming from the uterus. She was removed to the Montreal General Hospital, where she was also seen by Dr. Blackader. On opening the abdomen quite a large quantity of blood was found in the peritoneum together with a ruptured tubal pregnancy on the right side and a unilocular cyst of the left ovary. The right tube and the pedicle of the left ovary were tied off with silk and removed. The left tube and right ovary seemed to be in good condition and were not removed. The wound was closed and she made a good recovery.

DR. ELDER referred to a previous discussion on this subject which had followed the report of a case by Dr. Smith, who had advocated removing the healthy tube to prevent a possible second tubal pregnancy. Since then Dr. Elder had seen two cases of confinement, one of which he had operated upon himself for ruptured ectopic gestation at the Montreal General Hospital. It was not, however, exactly similar as the ovary and tube of the same side were removed. In the other case the right tube



and ovary were removed for ectopic gestation and a subsequent operation had been performed for appendicitis. He thought the fact that some one had collected as many as seventy cases where a second tubal pregnancy had occurred did not prove that all cases should be so treated as to prevent this accident happening.

#### **Fungating Growth of the Foot.**

DR. WYATT JOHNSTON showed a foot amputated by Dr. Armstrong for a peculiar fungoid tumour. The growth projected like cauliflower or Brussel's sprouts. There was a large ulcerating surface with periostitis and thickening of the tibia and fibula. The bones of the foot and the metatarsal bones and phalanges were very much atrophied and softened so that they could be readily cut with a scalpel. A microscopical examination showed the condition to be due to a hypertrophy of the connective tissue and an overgrowth of the sweat glands. The tissues were sodden and oozed serum very abundantly on being cut into. On the under surface was the extensive curious fungating condition.

DR. SHEPHERD had seen the case before amputation took place, and thought it was more like a verrucoid form of syphilis than anything else.

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*Stated Meeting, March 22, 1901.*

JAMES PERRIGO, M.D., PRESIDENT, IN THE CHAIR.

#### **Bothriocephalus Latus.**

DR. W. F. HAMILTON exhibited a specimen of this tape-worm. See page 350.

DR. FINLEY drew attention to the fact that Dr. Johnston had brought before the Society on a previous occasion another case of bothriocephalus latus which, if he remembered correctly, was in an Irishman. He referred to the association of anæmia with the presence of the parasite, the type of anæmia being sometimes indistinguishable from pernicious anæmia, both in the appearance of the patient and in the blood characters. It was possible that some of the unexplained cases of persistent anæmia were due to this parasite.

#### **Notes on Three Cases of Phthisis.**

DR. E. A. ROBERTSON read the reports of these cases, which will be published later.

#### **Chronic Malignant Endocarditis.**

DR. F. G. FINLEY reported this case, and DR. MACTAGGART exhibited the pathological specimens from it. See page 333.

DR. W. F. HAMILTON remarked that, from the appearance of the speci-

men, he thought it possible that there was either rupture of some of the chordæ tendineæ or ulceration of some of the columnæ carneæ. If in the blood stream there had been floating some infiltrated or thickened portions of muscle, this might explain the phenomena.

DR. ANDERSON stated that at the autopsy there was no evidence of rupture of the chordæ tendineæ. The presence of abscess formation or breaking down of an infarct in the spleen pointed to either an ulcerative or malignant endocarditis.

DR. W. E. DEEKS considered the fact of the presence of a presystolic murmur during life with no stenosis of the mitral valve was of interest, as some authors believe that presystolic murmurs never exist without stenosis. Here the vegetations on the valve had been the cause of it. He referred to cases which had come under his notice in which in an old case of endocarditis, a fresh attack of endocarditis had been induced by influenza; and also to one or two cases where a pleurisy had supervened in connection with the acute onset of endocarditis following influenza where the bacillus of influenza had been demonstrated. It was possible that an influenza had had something to do with the production of this condition.

DR. FINLEY, in reply, said that Dr. Anderson had answered Dr. Hamilton's question, and he agreed with him that the rupture had been a post-mortem phenomenon. He referred to cases shown before the society, one by Drs. Martin and Hamilton, and one by himself, in which a presystolic murmur had been present without stenosis. In his own case there had been an adherent pericardium. He was unable to say whether influenza had had to do with the production of the disease, as the bacilli had not been found, and as far as he knew had not been looked for.

### **Sarcoma of the Nasal Septum.**

DR. R. N. CRAIG reported this case, which will be published later.

DR. BIRKETT said that many of these cases of reported sarcomas were really of carcinomatous nature. Seven years before he had had a case under his care and had had an opportunity of examining it frequently since and there had been absolutely no recurrence. Many authors, too, reported cases as not recurrent because they allowed too short a time to elapse to determine the matter. The disease was a fairly common one, over one hundred cases having been reported.

DR. G. T. ROSS asked if there had been any examination of the neighbouring glands.

DR. CRAIG, in reply, said that he had stated that this was an uncommon condition on the authority of Bosworth of New York and Schmidt of Frankfort. There had been no lymphatic enlargement at all, either

in the neck or in the neighbourhood of the growth, and no induration was present.

**Insanity in Women from a Gynæcological and Obstetrical Point of View.**

DR. A. L. SMITH read a paper on this subject, of which the following is a synopsis:—

From the careful consideration of a large number of recent articles by writers of great knowledge of this subject, added to the writer's own somewhat limited experience, he felt justified in coming to the following conclusions:

1st. Insanity is not hereditary, as is generally supposed, but it is sometimes contagious.

2nd. Insanity in the majority of cases is not due to organic disease of the brain but to functional disorders of its circulation and of its circulating fluid.

3rd. In many cases in women the disorder of the brain's circulation is caused by reflex irritation, carried by the sympathetic from the pelvic organs and caused by retroversion of the uterus, cirrhotic ovaries, fibroid tumor, etc.

4th. In other cases it is the fluid circulating in the brain which is at fault; in some it is too poor in quality because the digestive apparatus is being interfered with by reflex irritation of the sympathetic due to lacerated cervix, endometritis, etc.

5th. In a lesser number of cases the brain is prevented from working because the blood is badly oxygenated or loaded with uric acid or other poisons.

6th. Hundreds of cases are now on record of insanity being cured by removal of the cause; the greatest number of mental cures have followed ventrofixation and shortening of the round ligaments for the removal of retro displacements while many others have followed the ablation of fibroids, cirrhotic ovaries, the repair of lacerated cervixes and even curetting.

7th. Such being the case, it is the duty of the family physician to examine carefully every woman in his practice who becomes insane or to have her examined by a gynæcologist, and if any pelvic disease is discovered it should be remedied.

8th. It is the duty of every medical superintendent of an insane asylum to have a systematic examination made, preferably under anæsthesia, so that unsuspected sources of irritation of the sympathetic situated in the pelvis may be removed. In one asylum alone this course has resulted in improvement in 66 per cent. and recovery mentally of 42 per

cent. of those operated upon, although the pelvic troubles had existed for from six to sixteen years.

9th. If anything is done it must be done thoroughly as several cases have been reported where no benefit resulted until a second and more complete operation was performed.

10th. In view of the number of women who become insane from uræmia more care should be exercised by practitioners in preventing this condition. All Protestant physicians should, with the advice and approval of one or two colleagues, empty the uterus before the kidneys become permanently damaged. (Catholic physicians are not allowed by their church to sacrifice the ovum in order to save the mother.)



## THE ASSOCIATION OF AMERICAN PHYSICIANS.

The Association of American Physicians met in Washington on April 30th, May 1st and 2nd, 1901. Dr. William H. Welch, of Baltimore, President, in the chair.

In his address Dr. Welch spoke of the advantages offered to students of medicine in the schools of the United States. In respect to post-graduate work in laboratories, America was second to none, but the same could not be said of clinical medicine and surgery, where the only way open to those who desired to become proficient in teaching was through dispensary work and private practice. In other words, the training of physicians had not kept pace with the training of scientists. Dr. Welch also referred to the losses the Association had incurred during the year through the death of so many eminent men, Drs. James T. Whittaker, Jacob M. DaCosta, William H. Draper, and Samuel C. Busey having passed away. Of these, three had been ex-presidents of the association, and all were numbered among the list of founders.

### *An Undescribed Cardiac Sound.*

Dr. Hobart A. Hare, of Philadelphia, described a peculiar vibrating systolic sound heard principally in debilitated patients over an area extending one inch to each side of the sternum at the level of the nipple. It somewhat resembled a friction rub, but was not friction, and the author believed it to be due to vibration of the chordæ tendinæ in an incompletely contracting heart. It could not properly be called a hæmic murmur. Nervousness, but not exercise, increased its intensity. It was best vocalised by the word "ching." Dr. Osler stated that in weak hearts he had heard a sound at the apex somewhat resembling a friction rub and one at the neighbourhood of the sternum of a more crunching character.

### *The Frequency and the Diagnosis of the Flint Murmur in Aortic Insufficiency.*

Dr. W. S. Thayer of Baltimore had found the Flint murmur 45 times in 74 cases of aortic regurgitation. In 12 of these mitral stenosis had been demonstrated at autopsy, while in 17 the mitral valve was normal, and in other cases various changes of the valve were found. Dr. Welch stated as his opinion that a presystolic murmur meant stenosis

of the mitral valve. The following he described as the characters of the Flint murmur:—It is not so hard nor so intense as the sound in mitral stenosis, and the thrill is less frequent and less intense. The characteristic valvular short first sound of mitral stenosis is absent. As an aid to making a diagnosis from mitral stenosis, the absence of endocarditis, and the presence of arterio-sclerosis are of value.

*The Causes and Clinical Features of Right-Sided Cardiac Hydrothorax.*

Dr. Alfred Stengel, of Philadelphia, pointed out the difficulty of distinguishing between unilateral cardiac hydrothorax and inflammatory pleural effusions. He referred to the greater frequency of right-sided hydrothorax, and held that it could not be accidental. It occurred mostly where there was considerable enlargement of the right side of the heart, and the probable explanation was obstruction of the great azygos vein as it empties into the superior cava by pressure of the enlarged right heart. The anatomical relations of the parts made this explanation the likely one.

*Myocarditis and Fatty Degeneration of the Heart.*

Dr. Beverly Robinson, of New York, pointed out the frequency of fatty heart in cases of anæmia, gout, and obesity; and held that it added greatly to the danger of anæsthesia. He thought physicians should be careful in advising operations in such patients.

*Hæmorrhage into the Pleura from a Pyothorax.*

Dr. A. Jacobi, of New York, related the case of a boy aged nine years in whom this condition had occurred. The physical signs and symptoms of pleural effusion were present, and a needle inserted had revealed the presence of pus. Resection of the sixth rib was performed, and first pus, then blood-stained pus, and then pure blood, drained away. The bleeding was seen to come from tufts of granulation tissue on the pulmonary pleura and was controlled by packing the pleural cavity with gauze. Recovery was complete but slow.

*Case of Cyst of the Omentum.*

Dr. Jacobi also reported this case. An Italian girl of 7 with marked swelling of the abdomen had been tapped twice and two quarts of blood-stained serum drawn off in each instance, followed by an apparent cure of the condition. On a third attempt the trocar was obstructed, when the abdomen was opened, and a thin-walled, multilocular cyst found attached to the great omentum.

*A Case of Pneumonia complicated by Pseudomembranous exudate on the mucous membranes of the mouth, tongue, pharynx, nares, conjunctivæ, glans penis, anus, etc., caused by the diplococcus pneumoniae.*

Dr. Charles Cary, of Buffalo, reported this remarkable case, which occurred in a boy aged 11 years. The symptoms suggested that the membrane was also present over the entire length of the digestive system. The patient recovered.

*Further Notes of a Case of Pernicious Anæmia reported at the meeting of 1900.*

Dr. E. P. Henry, of Philadelphia, related the further history of this case previously brought before the Association. From his experience the author holds that the presence of megaloblasts does not certainly determine pernicious anæmia, these cells being found in other forms of anæmia as well. The diagnosis of the disease is best made by the aggregate of symptoms.

*Report of the Progress of cases of Pernicious Anæmia presented to the Association in 1900, and a report of a case of pernicious anæmia with diffuse spinal cord lesions, with post-mortem findings.*

Dr. Frank Billings, of Chicago, added a further report of the history of 20 cases of this disease which he had contributed the previous year. He stated that he had adopted a method for determining what he calls the volume index of the blood. The percentage of red cells is estimated with the hæmatocrit and counted by the hæmocytometer, and a fraction is thus obtained, of which the former is the numerator and the latter the denominator.

*Acute Miliary Tuberculosis, Primarily Splenic.*

Dr. David D. Stewart, of Philadelphia, reported a case of this nature developing in a nurse who had charge of a tuberculous patient. General rapid tuberculosis developed about two weeks after she took charge of her patient, and the autopsy showed the spleen to be the probable starting point of the disease.

*Notes on Relapsing Fever in Hodgkin's Disease.*

Dr. John H. Musser, of Philadelphia, reported two cases of Hodgkin's disease in which a febrile period of from 6 to 9 days was followed by apyrexia lasting from 11 to 15 days. In one of the cases tubercle bacilli were discovered in the sputum, and blood from the same patient injected

into a rabbit led to the development of lymphomata in the animal's lungs. The fever was believed in both cases to be due to tuberculosis.

*A Study of Granular Degeneration of the Red Blood Corpuscles.*

Dr. Alfred Stengel read this paper for Drs. C. Y. White and William Pepper, of Philadelphia. The granules were found in workers of lead, both with and without symptoms, and were extremely constant. They were demonstrated by staining methods, showing a special affinity for certain basic stains. It was thought that their presence might form a valuable aid to the diagnosis of lead poisoning. Experimental administration of doses of lead to dogs had been followed by the discovery of them in the blood.

This concluded the first day's session.



T H E

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

EDITED BY

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## PREMIUMS TO SUBSCRIBERS.

One of the leading New York weekly journals announced in a recent issue a new feature under the heading of "Subscribers' Discussions." The topic on which discussion is invited is to be announced in advance, the first one being: "What is the best way of treating the stump of the umbilical cord?" and a prize of \$25.00 will be awarded to the subscriber who furnishes the answer most satisfactory to the editor and his advisers. Competitors are limited to subscribers to the journal; members of the editorial staff of the journal making the announcement and all persons known to be engaged in medical journalism, are disqualified. Moreover, no importance will be attached to literary style, and the winner of a prize will be debarred from competing for the rest of the year, the prizes being offered monthly.

In the editorial comment on the above offer it is stated that the object which it is intended to accomplish is to obtain "a number of expressions of opinion on some subject of every-day interest from the "rank and file" of the profession, who do the great bulk of family practice", and it is very truly remarked that "most general practitioners have very decided convictions founded on their own personal experience, convictions for which they are able to give very good reasons." While the object in view

is a worthy one, the limiting of competitors to subscribers only, the condition that each competitor can only obtain a prize once a year, no matter how his contribution may rank in comparison with those of other competitors, and the prominence given to the fact that literary merit is of no value in judging the contributions, all tend to make the offer more of the nature of a premium to those who subscribe for the journal, than would at first sight appear. A practitioner of some years' standing generally has very decided opinions regarding the value of his favourite methods of treatment, and the privilege of having his views appear in one of the leading weekly journals (regardless of his power of expressing himself correctly), with the added hope of obtaining a \$25.00 prize, should be a strong inducement to him to become a subscriber.

We can see no objection to the offering of premiums; but the natural inference is here, as in all commercial transactions, that the article requiring a premium to make it sell, is not considered by the buyer worth the price put upon it, without the premium.

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#### HOSPITAL APPOINTMENTS FOR WOMEN.

Miss Helen MacMurchy, M.B., of Toronto, writing in the *New York Medical Journal* of April 27, 1901, on the question of hospital appointments for women, gives a list of 559 medical appointments held by women physicians, compiled for the Woman's Medical College, Toronto. Of these positions, 215 are resident, 302 (including 114 resident) are in the United States, and 188 (including 99 resident) are in the British Empire.

We note that the large majority, as would be expected, are in special hospitals for women and children and maternities, but both special and general hospitals of all descriptions are represented, and in both England and the United States, a fair proportion of the appointments are as assistant physicians or internes to the State Insane Asylums. Canada is conspicuous by its absence from the list.

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#### THE LADY MINTO COTTAGE HOSPITAL FUND.

At the Third Annual Meeting of the Board of Governors of the Victorian Order of Nurses in Canada, held on March 14, 1901, a resolution was adopted in respect to the proposed Queen Victoria Cottage Hospitals. Briefly stated, the resolution pledged the support of the Board of Governors to a scheme to establish Cottage Hospitals in the North-West Territories and elsewhere in Canada, under a title of "Queen Victoria Cottage Hospitals," in commemoration of the life of our late gracious and beloved Queen. For this purpose a special fund is created, called "The Lady Minto Cottage Hospital Fund," to be kept in a separ-

ate account from the other funds of the Victorian Order and used only for the establishment and maintenance of such hospitals.

A committee was appointed with His Excellency the Governor-General of Canada as Chairman, Mr. J. M. Courtney, C.M.G., Treasurer, and Mr. James W. Robertson, Secretary, with full power and authority to carry out the provisions of the proposed plan. A small pamphlet has been issued by the Secretary setting forth the details of the proposed scheme and the need and value of the establishment of such hospitals. We have obtained the following particulars from this source.

Since the Order began its work in 1897-1898 it has helped to provide such hospitals in five localities, and they have proved of the greatest value and are doing good work, particularly in the more distant and sparsely settled localities where the sick poor are unable to reach the city hospitals. Among these five, one, at Vernon, B.C., has become self-supporting through the fees paid by patients and those obtained by District Nursing. Attached to the pamphlet is a plan for a six-bed hospital with an estimate of \$3000 as the cost of establishing and of \$1,850 as the yearly cost of maintaining the same.

The scheme as outlined above is carrying out one of the objects of the Victorian Order, which the Royal Charter of the Order states, Section 5 (*d*), is "to assist in providing small Cottage Hospitals or Homes." An appeal is being made to the prominent people of Canada to provide the funds necessary for this purpose.

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The following officers were elected at the Sixth Annual meeting of the Western Ophthalmologic and Oto-Laryngologic Association held in Cincinnati, April 11th and 12th: Dr. C. R. Holmes, Cincinnati, O., President; Dr. W. L. Dayton, Lincoln, Neb., 1st Vice-President; Dr. J. O. Stillson, Indianapolis, Ind., 2nd Vice-President; Dr. H. W. Loeb, St. Louis, Mo., 3rd Vice-President; Dr. O. J. Stein, 100 State St., Chicago, Treasurer; Dr. William L. Ballenger, 100 State St., Chicago, Secretary.

The next meeting will be held in Chicago, April 10th, 11th and 12th, 1902.

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The Twenty-fifth Annual Meeting of the American Dermatological Association will be held in Chicago on May 30th and 31st and June 1st, 1901. Dr. Francis J. Shepherd, Professor of Anatomy, McGill University, the President, will deliver his address on the morning of May 30th. Among the papers to be read are four on Blastomycetic Dermatitis, one of which is contributed by the President. A general discussion has been arranged for on the symptomatology, etiology, pathology and diagnosis of diseases of the nails. An exhibition of photographs, drawings,

microscopical preparations, etc., has been provided by the local members of the society. The meeting promises to be one of the most successful in the history of the association.

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We heartily congratulate our colleague Dr. James Stewart in having been elected Vice-President of the Association of American Physicians. If we mistake not, the only resident Canadian who has been similarly honoured by this distinctly select association, was his predecessor in the chair of medicine at McGill, namely, the late Dr. R. Palmer Howard. Dr. Osler, we need scarce remark, has since he left us been both Vice-President and President.

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The following appointments have been made in the Faculty of Medicine of the University of Bishop's College:—Frank R. England, M.D., Professor of Surgery; W. G. Reilly, M.D., Lecturer in Anatomy; Robert H. Craig, M.D., Lecturer in Laryngology; W. E. Deeks, B.A., M.D., Lecturer in Medicine; James M. Jack, M.D., Lecturer in Dermatology and Registrar of the Faculty; Louis Laberge, M.D., Lecturer in Hygiene and State Medicine; E. A. Robertson, B.A., M.D., Instructor in Gynæcology; and C. E. Gurd, B.A., M.D., Instructor in Gynæcology. In addition to these the following members of the teaching staff have received new positions: W. Grant Stewart, B.A., M.D., Lecturer in Medicine; A. J. Richer, M.D., Lecturer in Medicine; G. T. Ross, M.D., Lecturer in Laryngology; William Burnett, M.D., Lecturer in Obstetrics; and Frank J. Hackett, M.D., Lecturer in Surgery.

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The 26th Annual Meeting of the American Academy of Medicine will be held at the Hotel Aberdeen, St. Paul, Minn., on Saturday, June 1st, 1901 at 11 A.M. (Executive Session; the Open Session beginning at 12.00 M.), and continuing through Monday, June 3rd.

The principal features of the Meeting will be a Symposium on "Institutionalism," and another on "Reciprocity in Medical Licensure." Series of valuable papers on both topics have been promised, as well as interesting papers on some other subjects. The President's Address (Dr. S. D. Risley, of Philadelphia) will be delivered on Saturday evening, June 1st, and the Annual Social Session held on Monday evening, June 3rd.

Members of the profession are always welcomed to the open sessions of the Academy. The Secretary (Dr. Charles McIntyre, Easton, Pa.) will be pleased to send the programme, when issued, blank applications for fellowship, etc., when requested to do so.



It was with great pleasure and satisfaction that, in the list of South African honours, we noted the conferment of the D.S.O. upon two members of our profession attached to Canadian regiments, namely, upon Dr. A. N. Worthington, of Sherbrooke, Surgeon-Major of the Second Canadian Mounted Rifles, and Dr. C. B. Keenan, Surgeon to the Strathcona Horse.

The sterling work accomplished by both, although little commented upon by the public press, had become known to us through the unstinted praise bestowed upon them by the returning members of these two regiments, and well have they deserved this special distinction, a distinction regarded by most officers in the British Army as even more valuable than the Victoria Cross; for the latter is granted for particular acts of heroism, provided they are observed. Now many a brave deed escapes unnoticed and, what is harmful, many an act of bravado is chanced in the hope that it may lead to the V.C. The D.S.O., on the other hand, is conferred for steady and thorough performance of duty throughout a campaign. It marks the recipient as one to be trusted in any work assigned to him.

We are particularly gratified to think that the men thus distinguished are closely connected with us in Montreal. Both are old McGill students, both known to us at the time of their appointment as peculiarly fitted to do us and Canada credit.

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The much abused corset has at last found a defender, at least under certain circumstances, in Dr. A. E. Gallant, of New York, who recently, in a paper read before the Section of Gynæcology of the College of Physicians of New York, stated that it was of benefit in the treatment of movable kidney. He contends that in 90 to 95 per cent. of the cases of pain or discomfort produced by a movable kidney the symptoms can be relieved by the proper use of the corset. He does not wish to be understood from this as advocating the general use of corsets, but as women persist in wearing corsets, and as specially made belts and pads are difficult to adjust satisfactorily, it is better to teach them to wear their corsets properly. The method, however, described as the proper one will not, we fear, meet with the approval of the wearers of this article of dress any more than the discarding of it altogether does, for it is made tight fitting below and loose at the waist.

According to his directions the corset should be as long in front as can be worn, and two inches smaller than usually worn. It is then put on in the reclining position before the patient rises in the morning, laced as tightly as possible at the lower part, the abdomen being drawn upward to facilitate this, and the kidney is pushed up under the ribs

before fastening the upper end. This is not a new idea and its efficacy, it is said, can be still further increased, though we forget with whom the suggestion originated, by fixing a pad in the proper position to keep the kidney in place, on the inner side of the corset.

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On Monday, May 6th, the fortieth anniversary of Sir William Hingston's appointment as Surgeon to the Hotel Dieu was celebrated by a function held at the hospital in his honour. The ceremonies opened with the celebration of the Mass in the chapel of the hospital by Archbishop Bruchesi, after which the surgeons connected with the hospital presented Sir William with an address accompanied by an urn of great value. A second address was presented by the students of Laval University who had assembled in the operating theatre to do honour to their professor. Dinner was served in one of the large halls of the institution which had been tastefully decorated for the occasion, the guests comprising many of the leading members of the medical profession and of the clergy, Archbishop Bruchesi presiding. After doing justice to the excellent repast furnished, the Archbishop congratulated Sir William on his useful life, and thanked him for the good work he had done for the institution, for the poor and the sick. Sir William replied in a very happy manner, recalling many of the incidents of his connection with the hospital. Dr. Brunelle spoke on behalf of the Medical Staff of the hospital, expressing their appreciation of their senior surgeon, Sir William. Letters were read from Dr. Macdonell and Dr. Craik, Dean of the Medical Faculty of McGill University, regretting their inability to be present to do honour to their old fellow student, and Dr. Leclerc, on behalf of Sir William's old fellow students, warmly complimented him on the distinction he had received. Not the least pleasing part of the function was an address, presented by Dr. Jacques, the medical superintendent of the Hotel Dieu, from the patients who had assembled in one of the wards.

We wish to add our congratulations to those of his colleagues, and note with pleasure that although in his seventy-third year, Sir William is still actively engaged in the practice of his profession, and has lost none of that skill as a surgeon with which his name has always been connected, and which has won him so much honour.

## Obituary

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### THE HON. J. J. ROSS, M.D.

The Hon. John Jones Ross, M.D., died on Saturday, May 4th, at the age of 68. While a successful practitioner and one who was always held in the greatest respect by the profession, the Hon. Dr. Ross was better known to the people of Quebec as a politician. He entered politics in 1861, at the early age of 28, as a member of the parliament of old Canada and remained continuously in public life until his death. In spite of the ups and downs of political favour, his was a successful career. He was at various times speaker of the Senate, president of the Legislative Council and a member of Sir Charles Tupper's Administration. He was twice elected President of the College of Physicians and Surgeons of Quebec, in 1888, and 1892.

As indicating in what estimation he was held by the public, we cannot do better than quote the words of an editorial in one of our daily papers: "During his long career before the public his name was identified with much that told for the future of this province, that tended to the advancement of Canada, but never did the breath of scandal, which has so often tarnished a public reputation, touch the name of John Jones Ross."

Proceedings of the McGill Medical Society of  
Undergraduates.

LEUCOCYTOSIS AND TYPHOIDAL PERFORATION.

BY

COLIN K. RUSSEL, B.A.

Much has been written of late on the subject of leucocytosis in typhoid fever and special value is attached to its diagnostic importance in impending or actual perforation. Upon what degree of leucocytosis we ought to depend has not been elucidated, though one realizes that the more marked this sign is, the greater may be our assurance in deciding on the presence of a serious complication.

As to the nature of the leucocytosis, differential counts have shown that the most marked relative increase occurs usually in the mononuclear cells, a condition to be expected in view of the preponderance of lymphatic gland involvement in enteric fever. Experience in the hospital wards with cases of typhoid fever has shown that the leucocyte count may not be accepted off-hand as positive proof of the nature of the complications even where a perforation has been suspected, for other conditions resembling perforation in their symptoms may yield marked leucocytosis, while, on the other hand, in cases of actual perforation there may be sometimes a diminution of the number of white cells found in the blood.

In 37 examinations of uncomplicated cases of typhoid fever the leucocytes showed a variation between 200-12,000, an average of about 6,500. All counts were made as remotely as possible from the digestive period in order that I might obtain more uniform results. Of the number of complicated cases examined, the blood counts have shown more instructive and interesting results, results which, while showing the importance and diagnostic value of blood counts in enteric fever, nevertheless teach the important lesson that grave exceptions may occur and one may readily be led into error by attaching too great a significance to leucocytosis as a sign of perforative peritonitis. A few examples will readily explain the results obtained:—

**CASE I.—Typical case showing value of blood examination—  
Very doubtful signs of Perforation—Leucocytosis 28,000—  
Operation, Perforation Found—Recovery.**

A boy, æt. 7, was admitted from Dr. C. W. Vipond's practice to the Royal Victoria Hospital on the 11th day of the disease. The malady had been attended by the usual symptoms incident upon incipient typhoid fever and on the tenth day he complained of gradually increasing pain in the abdomen, especially in the right lower quadrant. There was no



alteration in the pulse or temperature to indicate radical change, nor did the abdomen present, apart from slight general tenderness, and rigidity, distension or obliterated liver dulness. He vomited once a small amount of food.

Dr. Garrow saw him in consultation and ordered his immediate admission to the Hospital, where he was carefully watched for the next few hours and the blood counts by Dr. Tooke showed in four different examinations an average of 28,000 white cells. A few hours later he was thought to have a slightly increased rigidity, and Drs. Bell and Martin recommended operation, which Dr. Garrow performed. The perforation, which was promptly discovered near the mesenteric attachment of the ileum, was sutured and the boy made a good recovery.

After the operation the leucocytes diminished, two days later being 19,000, and two weeks subsequent to the operation, 9,000. This, then, was a typical case to illustrate the value of leucocytosis, which was the main feature upon which was based a conclusion as to the necessity for operative interference.

**CASE II.—Signs of perforation, definite—Leucocytosis only 12,000 twelve hours after perforation occurred—Operation—Recovery.**

Mrs. T. This patient was admitted to the Montreal General Hospital under Dr. Shepherd as an emergency case; she had developed signs of perforation on the 14th day of the disease, and was operated on soon after admission.

In this case I was enabled to examine the blood immediately before operation, and the patient, apart from the local condition in the abdomen, was in a good state for operation. The white cells numbered only 12,000, but the perforation signs were characteristic. Operation was performed and the bowel duly sutured. The patient enjoyed an uninterrupted recovery.

**CASE III.—Perforation—Leucocytosis 4,800—Operation—Death.**

Mr. V. Admitted to the Montreal General Hospital under Dr. Molson on the 16th day of the disease with a blood count of 6,100 and no evidence of complication. Four days later the classical signs of perforation suddenly developed. A careful blood count was made by Dr. Henry, three hours later, showing only 4800 white cells. Operation was performed, the ruptured bowel discovered and promptly sewed, as were also six other ulcers which had already nearly eroded the thickness of the intestine. The patient unfortunately succumbed to the disease.

**CASE IV.—Signs of perforation—Leucocyte count averaged 14,500—Operation—No perforation found—Recovery.**

Mr. St. L. This case was one of two which presented features of unusual interest and instruction. The patient came to the Royal Victoria

Hospital under Dr. W. F. Hamilton's care on the 10th day of the disease, presenting the typical signs of typhoid fever with reaction to the Widal test. For four days the disease ran the usual uncomplicated course, when suddenly, on the evening of the 14th day of the malady, he developed pain in the abdomen, chiefly in the left lower quadrant. The pain gradually increased until within 32 hours marked rigidity was present. Dr. Ballantyne made two blood counts in succession at this time, the white cells numbering respectively 16,000 and 13,000, an average therefore of 14,500 before operation was commenced.

The operation by Dr. Garrow, however, showed neither signs of perforation nor peritonitis, the condition of the bowel being merely such as is to be expected at that stage of the disease. The abdominal wall was again closed and the patient has since run the usual favorable course of the disease without complication. The blood counts made on the day following the operation revealed in the average of three counts, less than 10,000 white cells.

**CASE V.—Signs of perforation—Leucocytosis 17,000—Operation. No perforation found—Mesenteric gland unusually large and swollen—Recovery.**

Miss O. In this patient, æt. 39, at the Montreal General Hospital, under Dr. Lafleur, the course of the disease had been favorable up to the 17th day, when, one hour after a bath, pain suddenly developed in the right iliac region, progressively increasing and with gradually developing rigidity. The tenderness and distension became so marked as to arouse grave suspicion of perforation and a blood count was made showing 17,000 white cells. Two hours later there were 14,000, and after a period of two hours more the cells were reduced to 10,000; showing in other words for typhoid fever a moderate degree of leucocytosis.

Upon consultation with Dr. Armstrong operation was decided upon and performed a few hours later, the local symptoms not having shown any signs of abatement. The laparotomy, however, failed to reveal any perforation, though two of the ilio-cæcal glands were unusually tense and swollen. In the absence of anything further the abdominal wound was closed and the patient made an uninterrupted recovery, no further sign of perforation developing.\*

**CASE VI.—Very definite signs of perforation—Blood count 14,000 to 11,000—Delay in operating to watch progress—Sudden general peritonitis—Leucocytosis 82,000—Operation—Death.**

Mr. A. This patient, an adult male, was admitted to the Royal Victoria Hospital under Dr. Martin on the 12th day of the disease with the characteristic symptoms, signs, and reactions of enteric fever. Two days later he developed rather suddenly some pain in the region of the spleen,

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\* This case is reported in full at page 89 of the February number.

with tenderness on pressure over the ribs in that area; there was no rigidity nor abdominal tenderness elsewhere; the pulse remained unaltered and the leucocytes numbered 12,000. The condition remained thus for the following 18 hours, except that his general condition seemed slightly more serious and some tenderness developed in the right iliac fossa as well. The pulse, however, which had been about 96, was not raised during this time over 104, and there was still no increase in the rigidity.

The blood examinations were made every three hours by Dr. Tooke, and showed never more than 12,000 to 14,000 white cells. For this reason, and more especially after the experience recorded in Cases 4 and 5, operation was not immediately performed. The patient, a few hours later, became suddenly collapsed, with signs of general peritonitis, vomiting, rigidity, great tenderness and a rapid pulse. It was then for the first time the blood counts rose appreciably, 33,000 white cells being present. The two previous cases had had a higher leucocyte count, without perforation, and with signs which in the early stages of the malady were far more characteristic of perforation, and yet the operation had revealed nothing. With all the signs present of collapse in this case and a pulse which could scarcely be felt, when Dr. Bell saw the case, the recovery after operation was not to be looked for, and the patient succumbed a few hours later.

*Remarks:*—That one may obtain marked variation in the leucocyte count in typhoid fever is well known, and in Dr. Cabot's comprehensive observations he has shown that, even where no complications are evident, one may obtain an average of over 15,000 white cells to the cmm. Further, that where certain abdominal complications, other than perforation, exist, the leucocytosis may rise to a very marked degree. Moreover, in the case cited by him of capillary bronchitis complicating pneumonia, the white cells numbered 9,000 to the cmm.

In a number of complicated cases of typhoid which I have examined, the same results could be determined in one patient in whom the only discernible complication was a simple bronchitis, there were 20,000 leucocytes to the cmm. In a case of cholecystitis, 13,000; in one of mild middle-ear disease, 13,000; and in a case complicated by general sepsis the white cells, as was to be expected, showed a similar increase, namely 13,000.

The cases above cited lead in the main to the following conclusions:—

(1) That in perforation it is the general rule to have a leucocytosis, but that the degree may vary within wide limits.

(2) That the leucocytes, while appearing as a rule early, may not be at all marked until the general peritonitis and collapse have supervened.



(3) That there may be an utter absence of leucocytosis with marked perforation and peritonitis, in fact, that the white cells may be lower than normal.

(4) That with typical signs of perforation and a definite leucocytosis, there may be no such complication present and an operation may be performed unnecessarily.

(5) That a marked degree of leucocytosis may occur in complications other than perforation, for example, bronchitis, cholecystitis, etc.

(6) That with pain and tenderness in the abdomen, coming on suddenly during an attack of typhoid fever (and in the absence of evidences of cholecystitis, or other definite complication), and a distinct leucocytosis, even without other signs of perforation, an exploratory operation is justified, even advisable, thereby obviating the dangers of a fatal issue from too great a delay. The exploratory operation in cases 4 and 5 done unnecessarily, resulted in no consequences and the patients made a satisfactory recovery.

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## MALARIA—ITS ETIOLOGY, RECOGNITION AND TREATMENT.

BY

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*Definition.*—Osler in his classical work defines Malaria thus:—"An infectious disease characterized by (a) paroxysms of intermittent fever of quotidian, tertian, and quartan types, (b) a continued fever with marked remissions, (c) certain pernicious rapidly fatal forms, and (d) a chronic cachexia with anæmia and an enlarged spleen."

*Etiology. Distribution.*—It is a widespread malady in the sub-tropical countries of Europe, America, Asia and Africa. Europe Southern Russia and certain parts of Italy, are the chief seats of the disease. The foci of epidemics in Germany, France and England are becoming every year more and more restricted. In America there has been a miraculous amelioration as to the extent and severity of the disease during the last half century. It has gradually disappeared from New England where it once extensively prevailed. In New York City mild types of the disease are not uncommon. In the valleys of the Delaware and Schuylkill, formerly hot-beds of the disease, malaria has succumbed to the effects of subsoil drainage and cultivation. It is still, however, fairly prevalent around the low-lying inlets of the Chesapeake. In the Southern States, and Lake Erie and St. Clair regions, malaria prevails at the present, but in diminished prevalence and intensity. The St. Lawrence Valley remains fairly free from the disease, though the great hospitals of Montreal treat several cases every summer and early autumn—cases which, for the most part have been imported



by the numerous vessels, which ply their trade between this port and the various malarial countries as Belgium and the East. The annual reports of the Royal Victoria Hospital give an average of 3 cases annually, while those of the Montreal General Hospital give an aggregate of 106 cases.

In India, malaria is almost an inevitable companion in the lowlying districts of Burmah and Assam, and is a scourge to European and native alike.

In Africa, malaria forms an imposing barrier to the civilization of the coast and river basins. The Black Water Fever of the Gold Coast is a very fatal form of hæmoglobinuria which is now generally recognized as due to the malarial plasmodium.

*Telluric Conditions:*—This is an undoubted factor in the etiology of the intermittent fevers. Malaria is especially prevalent in low marshy regions, rich in vegetation, and especially so in districts "such as the Roman Campagna" which have been allowed to fall out of cultivation; estuaries, ill-drained low-lying districts and old river beds are favorite haunts for the plasmodia of malaria. A subsoil impervious to moisture is particularly favorable to the development of the infection. The clearing of forests and subsoil drainage have done much to do away with malaria in New England and parts of Western Canada, but, Osler says "even these improvements cannot always explain the disappearance of the disease, since in many districts there are marshy tracts and low-lying lands, in every respect like those in which, even in the same latitude the disease still prevails." Hence this writer concludes that it is impossible to determine from the nature of the soil and climate if any given locality be malarial or not; and that the only means of deciding this point is by noticing the effect of residence in such a place on the human subject.

*Season:*—The effects of the season on the prevalence of malaria differ with the climates. In the Tropics, as India and parts of Africa, the maximal period corresponds to Spring and Autumn, the minimum to Summer and Winter. In the more temperate countries, such as the central parts of the United States, there are a few cases in May, but the vast majority occur in September, October and even November.

*Meteorological Conditions:*—(1) Heat of moderate degree is one of the essential factors for the development of the organism; malaria is more prevalent the World over during a prolonged hot summer. In those latitudes where the mean summer temperature does not exceed 15 to 16° C., malaria ceases to exist. Not only the number of cases, but also their severity is in direct relation to the temperature elevation." (2) Moisture is another but not so definite a factor. Thus in the Tropics the intermittent fevers are prevalent in the rainy seasons, but in the temperate

climates this relationship does not exist and the cases are most numerous after a dry summer.

Yet if the heat or the moisture be extreme, the development of the virus receives a temporary check. (3) Winds may play some part in the spread of the disease; thus the planting of trees has been held to interfere with the transmission of the virus. This is explained by many as due to the drying of the soil by the rapid growth of trees, like the Eucalyptus. (4) Altitude—It has long been known that the distribution of the malarial poison is influenced by gravity, thus persons dwelling in elevated buildings or in the upper stories of houses, have escaped malaria, while their less fortunate neighbors, who occupy more humble dwellings have succumbed to the insidious microbe.

*Specific germ:—Historical.*—For a very long time the infectious nature of the malarial fevers was suspected. In 1847 Meckel pointed out that the pigment in the blood of a malarial patient, was contained for the most part in round ovoid or spindle-shaped protoplasmic masses, which no doubt were the malarial parasite. This observer failed to recognise any connection between the pigment and the disease. In the next year, 1848, the great Virchow described and depicted in the blood of a malarial patient, pigmented bodies, many of which, from the description and accurate drawings, were no doubt phagocytes, while others were unquestionably the plasmodia, which were to be recognised thirty-two years later by another. Hischl in a monograph in 1850 recognised the connection between the presence of the pigment and the intermittent fevers. Planer in 1854 believed that the pigment circulating in the blood arose during the fever, and he believed it was the cause of many of the symptoms. The association of pigmentary leucocytes with malarial fever and the diagnostic importance of this condition was thus recognised by many observers before the actual discovery that the pigment was primarily contained in the body of a living parasite. To Laveran, a French army-surgeon stationed in Algiers, belongs this honour.

In December, 1880, in a report to the Société des Hôpitaux he described three forms of organisms: (1) Spherical bodies; (2) Flagella; (3) Crescentic bodies. Laveran found these bodies only in malarial fever and they disappeared under treatment with quinine. Hence he concluded "that there exist in the blood of patients with malarial fever, parasitic elements which have hitherto been confounded with melaniferous leucocytes: the presence of these parasites in the blood is probably the principal cause of the manifestation of paludism." This preliminary report having been received with the sneers and scepticism that welcome all advances in science, was followed in 1881 by a monograph in which he christens his newly discovered parasite as the "Oscillaria

Malariae." Shortly after this he added to the three forms of parasites already described, a fourth form, very much smaller than the previous, but which contain motile or non-motile pigment granules. These he considered to represent one of the phases in the development of the parasitic bodies above described. He maintained that these pigmented bodies were cysts containing the motile filaments, which in the free state represent the organism at its stage of most perfect development. The dancing movements of the granules he believed to be communicated by undulations of the protoplasm.

Laveran's observations were first confirmed by Richard, who accepted all the former theories in the life-history of the organism. At this time the scientific world was more interested in the work of several observers (Klebs, Tommasi-Crudeli, Marchiafava and Celli), who believed that they had isolated a bacillus which had a direct etiological relation to malaria. In many of the red corpuscles they found small round bodies, resembling micrococci, which were stained by methylene blue; further they found larger areas containing dark pigment granules, which areas they believed to be due to degenerative changes in the red discs brought about by presence of parasites. The crescents, they said, were simply due to decolorization of the periphery of the corpuscle. In 1885, however, they recognized that they had been dealing with a parasite and not with degenerative changes. But they maintained, and rightly so, that these parasites were intra-corpuscular, and not attached to the surface of the disc, as Laveran and Richard thought. Further, they were the first to call attention to the extreme amoeboid activity of these small non-pigmented forms and to suggest that the segmentary bodies represent a process of reproduction. Every observer of importance who had proper opportunities for the investigation of malaria confirmed Laveran's observations. In America, Councilman, Osler, Abbot, James and Dock contributed largely to the literature on the subject.

The year 1885 marked a new era in the researches of malaria. Golgi of Parva, founded a new school, which had for its main teaching that one may distinguish different types or possibly different species corresponding to the main types of malaria. This school was diametrically opposed to Laveran's school, which held that the malarial parasite is a single polymorphous organism, and that there is no constant relation between the different forms in which it appears and the various types of fever. Golgi was the first to point out that each paroxysm is always associated with the segmentation of a group of malarial organisms and that the severity of the attack is dependent upon the number of parasites present in the blood. Further, he observed that the tertian and quartan parasites exist in the blood in great groups, all the members of



which are approximately at the same stage of development. He described accurately the cycle of existence of the quartan parasite from the small non-pigmented bodies to the beautiful rosette forms which develop into six to twelve round hyaline bodies, each with a central reproductive point.

Councilman in 1887 was one of the first to emphasize the fact that the irregular and continuous fevers are associated with a different type of organism. Canalis in 1889 gave an elaborate description of the "creascent" of æstivo-autumnal fever, which was afterwards confirmed by many authorities in Europe and America.

Many observers have attempted to classify the various forms of the organism found in malaria. Most Continental writers describe 4 or even 5 forms. Dock, Osler and Thayer of this Continent, recognise only the tertian, quartan, and æstivo-autumnal varieties.

The *Tertian Parasite* accomplishes its cycle of development in 48 hours: hence sporulation and the paroxysm occur on every third day, when a single or group of parasites is concerned. It begins its life history as a small, hyaline, amœboid body in which fine brown granules rapidly appear and are thrown into active motion. The amœboid movements are slower and the granules are smaller and of a more reddish colour than are those of the quartan type; the outline of the plasmodium is very indistinct. The corpuscle begins to be decolorized early in the development of the parasite and this type tends to cause the blood corpuscles to swell and become larger than normal. The segments of the sporulating organism number 15 to 20 or even more, each of which is smaller than in quartan variety and contains no central refractive spot.

*Quartan parasite*:—Its life cycle lasts about 72 hours, hence, if only one group be present, sporulation will occur on every fourth day. The organism closely resembles the tertian, but the amœboid motion is slower; the pigment granules are coarser and darker and in less active motion; the fully developed organism is smaller; and the corpuscles tend to shrink about the parasite and to assume a deeper perhaps somewhat brassy hue. In sporulation the segments are fewer, 5 to 10, and form beautiful rosettes, being arranged with great regularity about the central pigment clump.

*Æstivo-Autumnal Parasite*:—The exact duration of the cycle of development of this variety is a much mooted point; it probably wants from twenty-four hours or less, to forty-eight hours or more. The arrangement in groups occurs at the onset of the disease, but often gradually disappears, and organisms at different stages of development will be found. The parasite itself is considerably smaller than the other varieties—being less than one-half of a red-cell; the pigment is scantier,



often consisting of a few minute granules. The later stages in its development are only to be seen in the blood of the spleen and bone marrow. The affected corpuscles may become shrunken, crenated and brassy in colour. At the end of a week one will find larger refractive, eccentric or round bodies with central clumps of coarse granules which bodies are characteristic of this type of malaria, but whose significance is a matter of dispute.

The segmentation of the tertian and quartan parasites, according to Golgi, begins eight to ten hours before the paroxysm and continues during its first hours, while at the same time fresh hyaline bodies begin to appear in the red cells; the actual entry of the newly formed segment into the corpuscle has never been observed.

*Flagella*:—From the full grown tertian and quartan parasites and from the incompletely developed æstivo-autumnal variety, long, actively moving flagella may develop. This process of flagellation is to be observed within 8 to 20 minutes after the blood has been withdrawn from the body and never occurs in the circulating blood. The length of the flagellum varies from one-half to three or four times the diameter of the red cell. They also vary in number from one to six, and they may be attached to any portion of the circumference. Fine detached flagella are also sometimes seen. According to Macallum, the flagella represent the male elements in a sexual process, and according to Manson they represent the form in which the parasite exists outside the body. This latter suggestion is supported by the fact that Ross in India discovered these flagella in the blood from the stomach of mosquitoes which had been allowed to feed on malarial subjects. On the other hand, if Macallum's suggestion be true, they are certainly not degenerate elements, in spite of Bignami's statement that the crescents from which these bodies develop are sterile elements as long as they remain in the human body. Sacharoff considers the flagella as chromosomes originating in the nuclei of the body of the parasite, while the flagellation he considers as a process of perverted karyokinetic division, accomplished in a violent manner.

*Classification*:—The plasmodium of malaria, all agree, belongs to that great division of the animal kingdom, to wit, the Protozoa. Osler considers it to belong to the genus of the Hæmocytozoa which is usually placed among the Sporozoa; others place it among the Hæmosporidia.

*Culture and Inoculation Experiments*:—All, or nearly all, attempts to cultivate the parasite, by the most varied methods have hitherto failed and proved uniformly unsuccessful, Saccharon, however, succeeded in keeping parasites alive for an entire week in leeches which were kept on ice. In the case of the æstivo-autumnal variety, he found forms with

actively amœboid movements and normal staining reactions after seven days, while an inoculation on the fourth day was successful.

Inoculation experiments have proved more successful. Gerhardt first showed that malaria could be transmitted by the inoculation of an individual with the blood of a malarial patient, but strangely enough, his results were obtained before Laveran had discovered the parasite. In most cases, 1 c.c. of the infected blood was introduced by means of a sterilized Pravaz syringe, either subcutaneously or intravenously. In 16 out of 18 cases the type of organism which was believed to have been introduced, re-appeared in the blood of the infected individual. The average duration of the incubation period was 11 to 12 days. De Mattei proved experimentally that the symptoms of malaria are produced by one variety of the organism only, the growth and development of which is associated with the disappearance or diminution of the other variety. Further it has been noticed that to the variety of organism which is in the greatest preponderance, are the symptoms entirely due.

*Manner of Infection:*—Malaria is supposed to enter the system in various ways. The three forms of entry are : (1) respiratory tract, (2) digestive tract, and (3) the skin, by bites of insects. (1) Theoretically, there can be little doubt that infection may occur through the respiratory tract, yet we have no absolute proof of this occurrence. (2) There is no positive, and much negative evidence, against infection by the digestive tract. Celli and Marion allowed several individuals to drink large quantities of water from the pontine marshes without ill effects. Some went further and allowed them to drink the blood of malarial patients without positive results.

The Mosquito malarial theory is a very old one. Two years ago Manson, of the London school of Tropical Medicine, directed two experiments, one of which was to prove the theory in a positive manner, the other by negative inference. For the first, Manson's son living in London allowed himself to be bitten by insects brought from Italy and developed typical symptoms of double tertian fever. For the second experiment two physicians and two attendants were sent out to the Roman Campagna where they lived in a mosquito proof hut during the entire fever season (July 19th, to October 19th). All the surrounding inhabitants suffered from malaria but the four occupants of the hut, although spending the entire day in the open air, protected by veils, and sleeping at night with the windows wide open, but protected by wire netting, never developed malaria. Nevertheless, in the face of these very suggestive experiments the theory went out of favor for some time. Since the discovery that Texas Fever and certain cattle diseases are transferred by means of suctorial insects there has been a gradual return to the old

theory that malaria, in many instances at least, must be transferred by the bites of mosquitoes. In 1898, Ross of the Indian Medical Service published some remarkable observations. He observed the behavior of the parasites in the blood within the stomach of mosquitoes fed upon human beings. Ross fed the gray mosquito upon the blood of birds containing the mature *Laverania*, and always found on the second day peculiar bodies embedded in the stomach wall of the mosquito. These bodies gradually grew until the 6th day or later, the pigment in the meantime disappearing; they protruded from the wall of the stomach into the body cavity. No such elements were ever found in mosquitoes fed upon non-infected birds, while he traced the appearance of fresh groups after feeding upon infected birds. Later on Ross noted that the coccidia-like elements ruptured and set free numerous spindle-shaped bodies to which were due the striated appearance of the ripe coccidium. Further, great numbers of these plasments were found in the circulation. Next, Ross discovered in the neck of the mosquito a minute structure of the nature of the venono-salivary gland, in the cells of which these coccidia-like bodies were found to ripen and cause in 8-10 days a great accumulation of the thread like elements, which he believed to represent the infectious agent. He then fed the mosquitoes on infected sparrows and after a little more than a week he allowed the mosquitoes to bite non-infected animals. In 22 out of 28 birds, after an incubation of from 5 to 7 days, there was developed an intense infection—many of the birds actually dying—an unusual event. If this be true with the protosoma in birds, there is good reason to believe that the mosquito may not only play the part of an intermediate host, but be the direct conveyer of infection in connection with the parasites of human beings. In fact Koch says:—"The more I study the disease the more do I incline towards the opinion that the mode of infection by means of the mosquito is the main, probably the only one." Wherever one goes one finds a relationship of both place and time between the presence of malaria and the mosquito. The negroes of Asambâra Mountain in Africa, call this malady "Inbu" and when asked how they acquired the disease, they reply that they were bitten by an insect of the lowlands which they also call "Inbu," and which is the mosquito. The same belief prevails in Italy and the Tyrol.

Grassi, an Italian, has not been idle, and has discovered 3 species of mosquitoes whose association with malaria is so definite that he asserts that the mosquito theory explains all the phenomena of malaria. Nay more, he has shewn that one variety, the *Anopheles Claviger* is associated in locality and season with the tertian parasite, while two others, *Culex Pernicularis* and *Culex Malariae*—occur in the localities and sea-



sons in which the æstivo-autumnal fevers predominate. Another Italian, Bignami by name, after several failures, obtained adult mosquitoes from a most malarious district and liberated them in a room in which slept a young man who had never suffered from malaria and who came from a non-malarial district. As a result the youth was frequently bitten by insects, and after continual residence for a month in this room, he developed fever followed later by a chill, and two weeks later his blood contained characteristic crescents. He concludes his discussion as follows, "So much is certain, inoculation up to the present, is the only means for which experimental demonstration has been obtained."

**Recognition.**—*Paroxysm.* The regularly intermittent fevers are characterized by recurring paroxysms of so-called "ague" in which chill, fever, and sweat followed each other in regular sequence.

Preceding the paroxysm by a few hours the patient experiences unpleasant and uneasy sensations, sometimes a headache. In a case which I reported at the Montreal General Hospital last September, the patient suffered from dyspnœa and indefinite pains in the epigastrium for about an hour before the paroxysm.

*Cold Stage.*—Even before the chill begins, there is some rise in temperature. The patient begins to shiver, the face looks cold, the teeth chatter, and the movements may be so violent as to literally shake the bed in a most audible manner. The skin temperature is reduced as shewn by the surface thermometer, but the rectal or oral temperature gradually rises until it may reach 105 or 106° F. During this stage no amount of clothing affords any degree of comfort to the sufferer. This chill lasts from 10 to 60 minutes.

*Hot Stage.*—There are now sudden flushes of heat and the surface temperature becomes gradually increased; the skin is reddened, the face flushed, pulse full and bounding; delirium may occur leading to deeds of violence. The patient complains of a severe throbbing headache. The internal temperature gradually falls. This stage lasts from half an hour to three or four hours. An intense and insatiable thirst is present.

*Sweating Stage.*—Beads of perspiration break out and soon the body is bathed in a copious perspiration, drenching the patient's clothing and bedclothes. In this stage all discomfort disappears and soon the patient, thoroughly exhausted, falls into a deep and refreshing sleep.

The above is a description of a typical paroxysm but variations are quite common. There may be only a slight sensation of chilliness instead of a chill; there may be a hot stage alone, or accompanied by slight sweating. The spleen is enlarged during a paroxysm and may be felt distinctly below the costal margin. Labial herpes is a common syn-



drome. Between the paroxysms the patient feels perfectly well and is usually able to get up and about. After several paroxysms or after a course of 10 to 14 days, the chills may stop spontaneously, but in such a case recurrence is very liable. Eventually the condition becomes chronic and forms the so-called Malarial Cachexia of which the chief characters are pure anæmia, from the destruction of the red cells by the plasmodia, an enormous enlargement of the spleen (the so-called "ague cake"), marked cachexia, and profuse hæmorrhages, particularly retinal.

The febrile paroxysm, according to Laveran is due to the irritating influence on the nerve centres of the parasites, which, having remained during the apyrexia in the internal organs, suddenly enter the general circulation. Richard, on the other hand, believes that the rapid multiplication of the parasites produces the fever, which represents the reaction of the organism against the invaders; they excite the fever, the fever destroys them and falls in turn. Golgi attributes the paroxysm to the invasion of the red-cells by a new group of parasites, and the severity of the paroxysm depends upon the number of fresh organisms which attacked the red-cells. It was later shown by Antolisci that the severity of the paroxysm depended upon the number of segmentary bodies rather than on the number of new organisms.

Bacelli first formed a chemical or toxic theory which is now generally adopted. He shewed that the paroxysm depends upon the entrance into the circulation of as yet undetermined poisons, which are set free at the time of the sporulation—poisons due either to the act of sporulation or to substances liberated from the disintegrated corpuscles. These poisons are injurious to the nervous system, especially to the vasomotor ganglia.

*Types of Fever:*—There are two types of the regularly intermittent fever, viz:—the tertian and the quartan. Of these the quartan is the rarer form.

The tertian type depends upon the tertian parasite whose life cycle lasts 48 hours, in consequence of which sporulation occurs every third day. The paroxysm occur synchronously with the sporulation. This is true if there be infection with only one set of organisms. As a rule there are two sets of organisms which sporulate on alternate days giving rise to a "quotidian" or daily paroxysm termed "double tertian."

The quartan type depends upon the presence of the quartan parasite, whose life cycle lasts about 72 hours, at the end of which sporulation occurs and consequently the paroxysm on the fourth day. If two groups of parasites be present, paroxysms occur on two successive days, followed by a day of intermission. More rarely three groups of parasites are present and we get quotidian paroxysms.

There may be mixed or combined types of fever, due to mixed infection with the tertian and quartan parasites.

Irregular, remittent or continued fevers occur in temperate climates chiefly in the summer and autumn, hence the term "æstivo-autumnal fever." It is due to the presence of the æstivo-autumnal parasite, the duration of whose life cycle is subject to many variations, while the absence of arrangement into definite groups is not infrequent. The symptoms as might be expected, are irregular. The chart shows all sorts of variations. It may be a regular intermittent fever at varying intervals from 24 to 48 hours; usually the duration of the paroxysms average over 20 hours instead of 10 to 12 hours. The onset may occur without chills or even chilly sensations. The temperature rises gradually and may fall by lysis instead of crisis.

From the anticipation of one paroxysm or the retardation of another a more or less continuous fever may result. Again, there may be continuous fever without marked paroxysms. The facies of the patient together with the splenic enlargement very definitely suggest typhoid fever. Delirium of a mild type may occur. Some cases subside within a week; others last for 10 or 14 days; others again assume the character of the pernicious malaria and terminate fatally. The fever yields readily to quinine.

**Treatment.** *Prophylaxis*:—Newcomers to malarial districts can take precautionary measures. Although I have shewn that the poison does not enter by the alimentary tract, it has been customary since time immemorial to boil the drinking water. This is good routine practice, but it is not effectual against malaria. Quinine in varying doses is the best. Some recommend 10 grains daily, others say 2 grains three times a day is sufficient

*Treatment Proper*:—The cold stage of the paroxysm may be relieved by wrapping the subject in warm blankets and by the administration of warm drinks. Quinine is the specific for malaria and for many years before the discovery of the plasmodium it was used empirically. Laveran afterwards proved that a 1 to 10,000 solution of quinine when run under a coverglass immediately arrested the movements of the parasites. As long ago as 1867 Binz pointed out that the efficacy of quinine depended upon its action as a protoplasmic poison on some lower organism which he assumed to be the cause of malaria.

Golgi made a careful study of the action of the drug on the tertian and quartan parasites, and pointed out the following changes which the quartan parasite underwent:—(1) In the intra-corpuscular stage it shows a coarse granulation and the protoplasm some cloudiness. (2) Occasional new abortive segmenting forms which are smaller than normal. The changes in the tertian parasite are still more marked, owing no doubt to its greater activity. The body is round and non-

motile and shews a sharper outline while the pigment has a peculiar metallic lustre and tends to collect in clumps.

Another observer asserts that three hours after the administration of a small dose of quinine, the amœboid movements of the tertian parasite shewed a marked diminution in activity, and in several hours they are diminished in number and some even are pigmented. In the case of the æstivo-autumnal type it has been noted that after quinine there is no increase in the number of the shrunken brassy corpuscles and that the included parasites are incapable of further development. But all observers agree that the crescents are affected slowly if at all by quinine. More recently it has been shewn that quinine destroys the staining properties of the chromatin of the nucleus and that segments of the rosette forms show no nucleolus.

Further, it has been shown that the drug acts most readily during and immediately after sporulation, when the parasites are free in the circulation. In the words of Marchiafava and Bignami "Quinine acts on the amœba of malaria during those phases of its life in which it absorbs nourishment and develops; when the nutritive activity comes to an end, the transformation of the hæmoglobin into black pigment being accomplished and the phase of reproduction begins, the quinine becomes inefficacious against this process."

It is also possible to have some effect on the parasites of the tertian and quartan parasites in the intra-corpuscular stage by a dose of quinine 10 to 12 hours before the paroxysm. This is not so easy in the case of the æstivo-autumnal. Hence it is the endeavour of the thinking physician to have a maximum amount of quinine in circulation at the time of the paroxysm and shortly before. A large dose of quinine (10 grs.) just before the paroxysm is expected, will not prevent the paroxysm, but will destroy a large portion of the group of parasites and so prevent its further recurrence. The best practice is to give large doses of quinine, says 20 to 30 grains in 24 hours for first three days and reduce to 2 to 5 grains daily, for next two or three weeks. Larger doses may be necessary in the æstivo-autumnal variety, but 30 to 40 grs. daily should be sufficient. By giving single doses some hours before sporulation it is possible to change a double tertian into a single tertian, and a double or triple quartan into a single or double quartan.

*Forms of Administration:*—The pills and tablets are not suitable as they do not dissolve readily enough. Capsules of the sulphate is a good method. Quinine in solution is also of service. When it is important to get the system under the influence of the drug very rapidly, as in the æstivo-autumnal variety with pernicious symptoms, the drug may be administered hypodermically as the bisulphate (30 grs.) in conjunc-



tion with tartaric acid (5 grs.) every 3 hours. The muriate of quinine was used in 10-20 grs. doses by Thayer in severe and pernicious malarías. Some also recommend the use of antipyrin in conjunction with quinine. Ziemann has recently recommend intra-muscular injection, as into the glutei which is not painful when the proportion of quinine to fluid does not exceed 1 to 4. Some recommend in very pernicious cases the intravenous injection of the bimuriate of quinine (15 grs. to 3 ii of water).

Euquinine, another carbonate of quinine, is a new and tasteless product. Gray maintains that in addition to being tasteless, smaller doses are necessary to reduce the temperature. But its chief objection is that it causes tinnitus aurium, deafness and visual derangements in a more marked degree than the same dose of quinine. The dose of Euechinin should be somewhat less than twice that of quinine, says another authority.

Methylene blue has been recommended by some observers, but while it has a definite action on paludism, it is materially less efficacious than quinine.

Before closing let me add just a word about Malarial Hæmoglobinuria—the black-water fever—which was thought at one time to be due to the toxic action of quinine. Such was the opinion of Koch and many other notable authorities. Denmance asserts that while it is true that malaria is a predisposing factor to hæmoglobinuria, the latter is most likely to occur in cases which have been neglected or not properly treated at the beginning, never as a result of quinine, but because quinine has not been given at a time when it alone would have arrested the process of the malarial infection. This is a somewhat sweeping assertion. Thayer, in an article in *Progressive Medicine*, 1899, takes a more rational view. He says: “(1) If the attack has come on without quinine and there are active parasites in the blood, quinine must certainly be administered. (2) If under the same circumstances parasites are absent, quinine is uncalled for. (3) If there is reason to believe that the attack has been precipitated by quinine, the drug should certainly be stopped, unless evidence of a very severe infection continues. To treat malarial hæmoglobinuria the microscope is an absolutely indispensable adjunct.”

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### PRESIDENTIAL ADDRESS

BEFORE THE AMERICAN DERMATOLOGICAL ASSOCIATION AT THE  
MEETING IN CHICAGO, JUNE, 1901.

BY

FRANCIS J. SHEPHERD, M.D., of Montreal.

It is with considerable diffidence that I, who am not a pure dermatologist, address so eminent a body of specialists as that now before me. I have felt greatly the honour you have done me in electing me President of this Association, and am sure that after the distinguished men who have preceded me, my occupancy of the chair will be a very inglorious one. However, I shall do my best, and trust that the Chicago Meeting will not be one of the least instructive and interesting, for the Local Committee have worked with a will and have accomplished much.

I have thought this a very suitable occasion (the first meeting in the 20th century) on which to look back and estimate the advances made in dermatology during the century which has lately been completed, and also to try and understand how much knowledge the dermatologists possessed a hundred years or more ago regarding the nature and causes of skin diseases.

We might say that the specialty of dermatology has been created during the past fifty years, and that no department of medicine has made greater strides forward than dermatology. Men interested in this specialty were the pioneers who first entered the then unknown sea of bacteriology, for to them is to be credited the honour and glory of first discovering the parasitic origin of many diseases. To Schönlein belongs the credit of first exploring these regions and opening up the whole field of cutaneous mycology, for he in 1839 discovered the parasitic fungus of Favus. In 1843 Gruby of Paris discovered the

ringworm fungus, and in 1846 Eichstädt discovered that of *tinea versicolor*.

The enormous influence that the discovery of the microbic origin of disease has had on surgery and medicine is incalculable. Without our present knowledge medicine and surgery would have been at a standstill, and we owe this, in the first place, to the men whose names I have mentioned above, and secondly to the magnificent work of Pasteur, Lister and Koch. As I have before said, perhaps no department of medicine has made more progress during the century just elapsed than dermatology; from being an indefinite, inexact and confused branch of medicine, it has developed into one of the most exact and scientific departments—from being a mere bye-path it has become a most important highway—and although there is much yet to learn about the pathology and etiology of diseases of the skin, nevertheless, during the quarter of the century just elapsed, and especially since the discovery of the microbic origin of many diseases, vast strides have been made.

Notwithstanding the fact that most of the pathological processes and changes are taking place before our very eyes, there is great diversity of opinion regarding the significance of those changes, and many difficult problems beset us which are as yet unsolved. Many skin diseases are more than mere local manifestations, for, as it has been said, "They have their roots in the interior," *e.g.*, such diseases as syphilis, tuberculosis, the eruptive fevers. There is a close connection between certain skin lesions and diabetes, dyspepsia, rheumatism, etc., acne may be connected with menstrual disorders, urticaria with the pregnant condition, with pleurisy, and the ingestion of certain obnoxious foods, and purpura with rheumatism. Many rashes are produced by drugs; obstructive jaundice may produce xanthoma, etc., and so it is evident that the pathology of skin disease is intimately connected with general pathology. How important, then, is it that the dermatologist should have a general knowledge of disease. The great principles of medicine and surgery should first be mastered before the study and practice of a specialty is undertaken. In this way a much broader grasp of the subject is obtained, and the specialist is much less likely to run into narrow grooves. Plato recognized this, and said that "the reason why the cure of many diseases is unknown to the physicians of Hellas is because they are ignorant of the whole, which ought to be studied also; for the part can never be well unless the whole is well."

Diseases of the skin are on the borderland between medicine and surgery, and both departments lay claim to certain skin affections.

Syphilis, tuberculosis and malignant diseases of the skin have been claimed by the surgeons, and the exanthemata, which occupy so much space in the works on dermatology of the early part of this century, have been almost given up by the dermatologists and annexed by the physicians, who in their text-books describe them very fully.

One hundred years ago the classification of skin disease, as described by Plenok in 1783, Willan in 1808, and Bateman in 1813, was based purely on the external appearances of the eruptions, the "physical-signs" as they might be called. The classifications adopted by these men are all much alike, namely, Maculæ, Pustulæ, Versiculæ, Bullæ, Papulæ, Squammæ, Tuberculæ, etc. Bateman has a class of exanthemata. Parasitic diseases were almost unknown, though Plenck has an order called "Insecta Cutanea." Elephantiasis Arabum, lupus, pellagra, syphilitica, keloid, diseases of the hair and nails, etc., were classed separately.

This classification was adopted by writers in England and on the Continent, either wholly or in a modified form. Then came the classification of Alibert, which divided the diseases of the skin into families, and was illustrated by a magnificent atlas of plates, which tended to popularize his views. His classification was as inaccurate as his pathology was erroneous; Rayer said, "it was deficient in unity and principle."

Hebra, inspired by Rokitsansky, was the first to classify diseases of the skin on a pathological basis, and though his scheme has been much modified by recent discoveries and the better methods of histological investigations, most writers, even at the present time, have a classification more or less modelled on Hebra's system. I must not omit to mention the diathetic school of Hardy in Paris, and the anatomical and therapeutical school of Erasmus Wilson in London. In this Association both the clinical and anatomical classifications have been discarded, an alphabetical list of diseases being thought sufficient to fulfil all requirements.

Enough about classifications—a troublous sea on which I do not intend further to sail.

At the beginning of the 19th century *Impetiginous Eczema* of children was considered beneficial rather than injurious to the general health, and no remedial measures were advised. Now we know this eruption is due to a specific organism, and is best treated with germicidal remedies, and when cured the patient is much benefited. Cutaneous cancer was considered as the outward manifestation of a diathesis, the effect of which would soon be felt by some of the internal organs. Now we know that cancer is "prima facie" a local disease, and only becomes



general when the lymphatics are involved and the disease has lasted some time, that if eradicated early and thoroughly, it can be cured in many cases.

It was believed that the appearance of eczema or a lichen during the course of an internal malady, was always followed by a favorable solution of the disease; that during an acute disease the cutaneous affections would sometimes disappear, and physicians considered it was most important to administer remedies to bring it back so that by this means there might be a favorable termination of the internal disease. The idea that it is not well in all cases to try and cure an eruption, say of the scalp, for fear of entailing something worse upon the patient, is not yet extinct among intelligent people.

In the beginning of the last century in all works on Dermatology, Lepra and Psoriasis had separate chapters for their description, and were looked upon as distinct diseases. From the description given by Bateman in 1819, one would now conclude that they were one and the same disease; the only essential difference being that the patches in lepra are circular and discrete, while in psoriasis they are irregular and diffuse, and in 1842 S. Plumbe, although he devotes 12 pages to lepra and 21 to psoriasis, says that "he is fully convinced that for all purposes of useful discussion lepra and psoriasis might have been included under one head." He says also that "the information we have at present acquired in the modern study of cutaneous diseases, does not enable us to find a better reason for their separation than that afforded by the circumstance of its having been made by the ancients."

Arsenic and pitch were given with good effect then, and sulphur baths were strongly advised, but bleeding and purging were condemned by Bateman. White precipitate ointment is advised in some cases, also unguentum picis and dilute citrine ointment. Bateman found the decoction of the leaves and twigs of the *Solanum dulcamara* most beneficial.

As to the etiology of the disease, as much was known a hundred years ago as now; heredity was held to be a factor, and certain foods and drinks were said to produce it, cream, vinegar, oatmeal and alcohol, and in some cases violent exercise of the body are given as causes. Willan says cold and wet will bring it on, but the conclusion of most of these early writers is that the causes of this disease (lepra) are involved in much obscurity. No less than three varieties of lepra are described and eleven of psoriasis.

The history of *Scabies* is a most interesting one. Four different forms were recognized, viz., *S. Papuliformis*, *S. Lymphatica*, *S. Purulenta* and *S. Cachectica*. The clinical features of each one of these

were well known, and also the fact that scabies was contagious. Although the "itch mite" had been discovered as early as the 12th century, according to Hebra, and is mentioned by Ste. Hildegard in a book entitled "Physika," yet at the beginning of the 19th century it was unknown to most physicians, some recognized its existence, but it was regarded as a kind of louse and merely present accidentally in scabies. In the 17th century old women went about extracting these insects with the point of a needle from their burrows in the skin, and Borromo and Cestoni regarded the acarus as the cause of the disease, and said it could be communicated by contact and by shirts, pocket-handkerchiefs, gloves or other articles worn by the persons affected with the disease. The acarus would appear to have been lost sight of for many years, and even in the beginning of last century its existence was doubted by medical men in France, though veterinary surgeons were familiar with it as scab in sheep. But authors such as Bateman, Bielt, and Casenave, still ignored it; some admitted the existence of the insect, but said it was a rare and casual circumstance, the approximate cause of the disease being the fluid secreted by the pustules.

Casenave (1829) said: "the proximate cause is wholly unknown," and thinks that pedicular diseases have been mistaken for it by those who believe in the itch mite. M. Gales had in 1812 at the Hôpital St. Louis, demonstrated many times the presence of the insect, and described it. Still Casenave says in 1828, "that until M. Gales, . . . would again visit the Hôpital St. Louis and reiterate his experiments, he should think himself justified in believing that the acarus does not exist."

In 1834 a Corsican named Renucci taught the physicians of Paris how to find the acarus. But old beliefs and superstitions die hard, and even after Eichstädt of Griefswald in 1846 described the burrow and position of the eggs in it, and the larval stage of the animal, and Languentin and Bourguignon described and gave drawings of both the male and female itch mite, and proved by experiment the contagiousness of scabies to be due to the transference of this insect, yet the profession was not convinced. In 1852, nay, even as late as 1864, some authors (Casenave, Duvergie and Gilbert), admitted that scabies could be communicated by the insect, but held that the secretion from the eruption itself was the most frequent cause of contagion. Duvergie said in 1863, that "Scabies may be a spontaneous disease," Hebra in 1846 wrote a paper on scabies, in which he credited the acarus with being the only means of contagion in this disease.

*Ringworm of the Scalp* was classed under the Herpes group of erup-

tions, with herpes zoster, etc., and was called herpes capitis, or tonsurans, that of the body, herpes circinatus. Most English dermatologists up to the middle of the last century held that ringworm was not contagious, because no other form of herpes was, and it was not inoculable. Casenave held strongly that *H. circinatus* was contagious, but did not know it was caused by a vegetable parasite. Andrew Paul, who published in 1838 an essay on ringworm, with plates, quaintly says in his preface that "he has added some plates containing representations from nature that those who have not leisure to read the book through may, however, by looking over them, have some knowledge of what it contains." Mr. Paul's work gives one an idea of the extent of the information on the subject which existed at that time. The nomenclature is most confused, for under Ringworm are figured herpes zoster, herpes iris, herpes circinatus or vesicular ringworm, herpes labialis; porrigo favosa (well illustrated), porrigo decalvans (alopœcia areata), porrigo aversa (favus), porrigo annulata (probably lupus erythematosus) and another in the head, probably true ringworm. And again impetigo figurata, probably impetigo contagiosa. There is also a good representation of a pediculus, which is said to attack the heads of children affected with ringworm. He holds ringworm is highly contagious, but is influenced by unhealthy secretion of milk, impure air, teething and surfeit. He looks on the disease as at first local, but afterwards becoming constitutional, as evidenced by the enlargement of the glands of the neck. Pediculi capitis, favus, herpes, scabies and seborrhœa are all confused with ringworm. The itch insect and pediculi are spoken of indifferently as one and the same, and he describes how the galley slaves at Leghorn are very dextrous with pin and needle in extracting them from the skin.

This book gives one a very good idea of the confusion which then existed as to the nature of the various diseases which attack the scalp, and the great ignorance which there was before the discovery of the ringworm fungus by Gruby in 1843.

*Tinea Sycosis Barbæ* had been described by Celsus and later by Galen, but Bateman is the first to give a good description of sycosis. He treats it with mercurial ointments, but at the same time prescribes alternative doses of mercury and antimony followed by cinchona or serpentaria, "especially where there appears any affection of the digestive organs, which not infrequently occurs with this eruption." Most of the writers of the early part of last century confuse ringworm with sycosis, and many later on describe this disease as caused by a vegetable parasite. Even as recently as the time of the great Hebra sycosis was supposed to arise from a morbid principle in the blood. Some said it was apt to occur in cooks, founders, stokers and others



subject to long continued heat; Erasmus Wilson supposed it due to night air, and many to blunt razors (a very probable contributory cause). Hebra said it was due to letting the beard grow; he laughed at the idea of the disease being caused by a dyscrasia.

Now we know that the disease is of microbic origin and contagious, and is often conveyed by the shaving brushes and towels of barbers. According to Unna, there are two forms of the disease, one of cocco-genic, the other of bacillogenic origin.

Nearly all the works on dermatology in the early part of the century have a chapter on *Vaccinia* or cowpox, and give accurate directions how to procure the vaccine virus, and the appearance of the vaccine "pock" in its various stages is described minutely. *Vaccinia* is classed under the pustular eruptions. A number of spurious vaccine pocks are described. Casenave (1829) mentions the fact that small-pox sometimes co-exists with *vaccinia*, or that *vaccinia* does not always protect, the same may be said of inoculation, yet both will modify the attack of small-pox if they do not protect. He concludes by saying, "Vaccination without inducing any danger in itself is still a preservative means of the highest grade of utility, and it is perhaps the most glorious victory of the art of medicine."

Would that all thought so now! In those days people were familiar with the terrible ravages of small-pox, and knew that few reached adult life without being pitted, so they welcomed with joy any means which held out a promise of relief from the dread scourge. Now-a-days, anti-vaccination societies abound, and it has become as much of a cult as Christian Science, Homœopathy, and such like delusions. Alas for the progress of the human race and its improvement by education! Education has not destroyed superstition or the belief in fads, for it is among the so-called educated classes that quackery flourishes and has its chief support.

In this brief sketch I have given you a sufficiently long account of the state of knowledge of some of the diseases of the skin in the beginning of the 19th century, and have told you how confused most of this knowledge was. The discovery of the parasitic origin of many affections aided much in clearing away the clouds and mists which enveloped diseases of the scalp especially, and prepared the way for the Vienna school of pathology which was led by Hebra, who was inspired by Rokitansky. Hebra, by his scientific knowledge and his common-sense way of looking at diseases of the skin, has done more than any man to drive away the superstitions and fallacies which enshrouded dermatologists at the beginning of the last century, and in this he was assisted by Hardy of Paris and Erasmus Wilson of London.

During the last quarter of the 19th century the histological and



bacteriological methods of investigation have thrown much light on diseases of the skin, and have helped to place the study of dermatology on a scientific basis. Many new affections have been described, and many old ones have had to be re-classified. The parasitic diseases are becoming thoroughly known, and with the new means at our disposal for investigation, ringworm, favus, tinea versicolor and scabies are now fully understood—the first named, owing to the work of Sabourand and others, is now known not to be due to one and the same fungus, but to several different kinds.

Eczema seborrhœicum has been given to us by Unna, and Duhring has contributed Dermatitis herpetiformis. Then we have Raynaud's disease, myxœdema (Ord), angio-neurotic œdema, pityriasis rubra pilaris, parakeratosis variegata, porokeratosis, blastomycosis, and many others which I have not now time to even mention. Lupus, which formerly was classed under the new growths, is now placed under tuberculosis, though there is yet some difference of opinion as to the proper place of the erythematous variety.

Many new remedies have been introduced, such as chrysarobin for psoriasis, thyroid extract for myxœdema, and many new germicides, such as ichthyol, naphthol, salicylic acid, resorcin, etc., their name is legion. The X-rays and sunlight have been pressed into the therapeutic service, and animal extracts are as popular now as in the middle ages.

The advances within the last quarter of the 19th century, both in medicine and surgery, as well as in the special departments, have been marvellous. Could one of our confrères of the first quarter of the century come to life, he would imagine himself to be under an enchantment, and yet the present generation look upon these wonders unmoved, and take them as a matter of course. It is possible that the present century will see much greater marvels than the past, and that diseases which are now raging in our midst may be altogether abolished, for most are preventible.

It has been said that nearly all lethal diseases might be classed under three heads, the *Tuberculous*, the *Carcinomatous*, and those due to *Septic germs*. It is very possible that these diseases may be abolished by some antitoxin, and that syphilis, leprosy and diseases of that class, may be so controlled as in time to be abolished altogether, and then the occupation of the doctor will be gone, for people would only die from old age or from accident; a few surgeons would be required to treat the accidents which would continue to happen.

Such is the dream of the more Utopian members of our profession, and I might say with Hamlet, "It is a consummation devoutly to be wished."

ON THEORIES OF INHERITANCE, WITH SPECIAL REFERENCE TO THE INHERITANCE OF ACQUIRED CONDITIONS IN MAN.\*

BY

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Questions of inheritance at the present moment occupy a curious position in the minds of medical men and in medical literature. To judge from the medical press, we medical men are very Gallios—we care for none of these things. And yet, in family as in consulting practice, questions concerning heredity must and do continually present themselves. In attempting to arrive at a conclusion about a given case, we are bound to ask ourselves how far the frailties or follies of progenitors are responsible for the conditions found—how far the accidents or the sins of the individual. Each succeeding day you must have this question of possible inherited defect brought before you; constantly must you be forced not merely to inquire whether certain phenomena are matters of inheritance, but assuredly to recognize that this or other condition runs through all the members of a family and is an inherited weakness. And yet, although the lay reviews discuss the matter familiarly, and although perchance the charming partner you take in to dinner does the same, we scarce write about these things, save in connection with one or two branches of medicine, and when we do, I have no hesitation in stating, though it is a bold statement, that much of what is written is misleading.

Even in my own subject of pathology, treating as it does of the causes, the processes and the results of disease, in the discussion of which the laws of inheritance should obviously be carefully studied, if inheritance plays even a debatable part; turn to any of the text-books in our language and what do we find? A single page, or it may be but a single paragraph, is thought sufficient to introduce and to take leave of the subject. In short, from a concatenation of circumstances the medical study of inheritance is largely “taboo.” Why is this?

It depends upon more than one factor. In the first place, while, as I shall point out later, the study of man is singularly well adapted for determining certain points in connection with inheritance, the fact that the generations of man follow each other at such relatively long inter-

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\* The first of a series of annual addresses under the auspices of the Brooklyn Medical Club, delivered May 17, 1901.

vals is against man being for most purposes a good subject for investigation. In the course of a long life the investigator can but study the characters of three, or it may be four, generations in one family, while influences acting upon the susceptible *fœtus in utero* in man, as in all mammalia, introduce complications. The basal facts of heredity have to be made out in the lower animals, in which generations succeed each other with fair rapidity and in which the eggs are fertilized and from the first developed outside the body.

Unfortunately, too few of us are trained biologists; the curriculum of the past, as of the present, laying too little stress upon the value of a broad biological training as an aid in preparing us to discuss those special biological problems which constitute medical study. Thus the medical world in general has to depend upon the biologists proper—upon the zoologists and botanists—for its views upon heredity, and the pure and simple biologists have run riot in their lucubrations upon this subject. Do not think that I mean to belittle them or to indicate that we do not owe much to all the investigations and all the writings of the biologists of the last twenty or thirty years. The facts which they have elicited have been of the highest value. Without these facts we would be nowhere, but the contending theories elaborated by them (perhaps I should be the last to make any such criticism) have been fearful and wonderful, have started from morphological rather than physiological conceptions, and as a result have assumed shapes which would not disgrace the schoolmen of the Middle Ages. While they have appeared to collate and harmonize the facts known at a given moment, new facts have caused them to need modification, and the successive attempts to utilize the old bottles for the new wine, where they have not burst the bottles, have led them to assume most grotesque shapes. In fact there has been developed such a muddle that no amount of midnight oil and wet cloths bound around the temples permits the ordinary mortal to disentangle and follow the course of one theory.

This being the state of affairs, it is little wonder that we have passed by on the other side and have been unwilling to apply the theories of the biologists to the problems of medicine—and this all the more because the trend of these theories has been in apparently strong opposition to medical experience. Of all the workers of late years Weismann has had the most influence upon biological thought, and his theory, if not accepted by all in its entirety—and if, indeed, now found unacceptable—has, nevertheless, profoundly affected the general consideration of this subject of heredity. That theory is very complicated, and with Weismann's successive publications has not by any means become easier to follow or to epitomize in language devoid of technicalities. Still, if



not every schoolboy, at least every educated man is supposed to comprehend the general tenor thereof and its main thesis or conclusion, that acquired characters—characters acquired by the individual—are not and cannot be transmitted to the offspring. To use Weismann's own expression, "We maintain that somatogenic characters" (characters originating in the cells and tissues of the body)" are not transmitted, or rather, that those who assert that they can be transmitted must furnish the requisite proof. The somatogenic characters not only include the effects of mutilation, but the changes which follow from increased or diminished performance of function and those which are directly due to nutrition and any of the external influences which act upon the body. Among the blastogenic characters" (characters originating in connection with the germ cells), "we include not only all the changes produced by natural selection operating upon variations in the germ, but all other characters which result from this latter cause" (1). In natural selection is to be found the key of the phenomena of inheritance.

Now, up to a certain point, we as medical men are prepared to accept this teaching. We know from experience that acquired mutilations are not transmitted, we acknowledge that no clear and satisfactory examples of the transmission of mutilations have been brought forward. We can realize that the loss of an arm, for example, has no direct influence upon the germ cells of the individual, and that so these germ cells if fertilized will develop into the complete individual. But there is another class of phenomena specially interesting our profession which appears to give a direct lie to Weismann's thesis. And it is, I think, this failure of the ruling theory to explain satisfactorily the phenomena in question which has been the main factor in making us as a profession not enthusiastic of late years to debate the subject.

For, accepting the theory, we must be prepared to deny wholesale the transmission of acquired defects of every order and give ourselves over to a most serious form of fatalism. If an individual is from the first feeble-minded, that is not his parents' fault; it is due either to an unfortunate commingling of the ids, or ancestral plasms, composing the promiscuous ovum and spermatozoon from which he is derived or to characters which have come down to him from previous generations. If he, being diseased, begets feeble-minded children, he is in nowise to blame—acquired characters are not transmitted. Either those feeble-minded children are an accident—a spontaneous variation—or more probably they represent the summation of characters inherited from long generations. If a man or a woman becomes an alcoholic, it is not his or her fault, it is the result of inherited tendencies; and if the children of the same are of weak constitution or idiotic, again the parents are blameless



—characters acquired by the parents are not transmitted, the characters of the parents must have descended to them. If a man is a criminal, again he is not to blame; criminality is atavism, is a reversion to an earlier state, is an inheritance of characters or features peculiar to primæval man. We are, so the popular translation of Weismann's theory goes, the descendants of criminals, or at least at a certain stage our ancestors were of an imperfect and criminal type. And if criminality appears in the family, with imperfect formation of head and brain and low mental state, that is due to the fact that by the fortuitous extrusion of certain ids from ovum or spermatozoon, the ids of the criminal ancestors have preponderated in the fertilized cell and the result has been that the individual has developed possessing criminal features. However much a man abuses his soma, or body, is of little moment; the effect upon the offspring is minimal.

I put this in strong language and baldly, and it may be urged that I exaggerate the state of affairs. I do not think that I do. I believe that in making this statement I but give expression to the general, if confused, ideas of the majority; nay, more, that I state the received conception of what Weismann's theory means when applied to man and to abnormal inheritance in man.

Now, if there is one conclusion to which we think experience surely leads us as medical men, it is that the sins of the father do tend to be visited upon the children even unto the third and fourth generation. We think we see this demonstrated day after day. But Weismann does not support the view. It is true that if we study Weismann we find that he does not state this in so many words; he admits (?) that the germ plasm is not absolutely unchangeable, that the nutrition and growth of the individual must exercise some influence upon its germ cells, "but in the first place this influence must be extremely slight, and in the second place it cannot act in the manner in which it is usually assumed to take place." Certainly he does not make it clear that he believes in the distinct transmission of any order of acquired characters.

WEISMANN'S THEORY.—Weismann, I need scarce say, explains inheritance along the following lines: The germ plasm, the essential matter of the fertilized cell from which the individual develops, must in the process of fertilization come to contain portions of the germ plasm of both father and mother, brought to it by the nuclear material of the ovum and spermatozoon respectively, and the germ plasm of the father and mother must contain portions of the germ plasms of paternal and maternal grandfathers and grandmothers. And so, going back through a long series of generations, it follows, according to him, that representatives of the germ plasms of a long series of ascendants, or progenitors,

are contained in the nuclear material of each ovum and spermatozoon. The constitution of a germ cell therefore may be represented, for purposes of inheritance, as made up of a vast number of ancestral plasms, or "ids," derived from the long line of progenitors.

I need not here explain his most ingenious demonstration of the means whereby at each successive act of fertilization a certain number of these ancestral ids are discharged, so that the ovum and spermatozoon each contain half the number originally present, and so that the number of ids in the fertilized ovum is kept constant. I need but point out, in passing, that by this process of reduction the set of ids discharged from one germ cell is by this theory held to be different from that discharged from another germ cell of the same individual. And as the ids in two fertilized ova are not identical, as the same series of ancestors do not contribute to the germ plasm of the two, so it is that individual variation originates; the ids varying, the individuals controlled or developed by these ids tend to vary. So it is by this fortuitous commingling that spontaneous variation is apt to show itself.

Further, it has to be noted that when the ovum undergoes segmentation, and half of the nuclear material passes into one cell, half into the other, according to Weismann a certain definite series of these hypothetical ids passes into each cell and, according to the series entering each of them, so are determined the eventual characters of the tissues to which those daughter cells eventually give rise. The germ cells of the new individual become differentiated at a very early period, receive the full complement of the ids, and so carry on the whole series of properties inherited from the ancestors.

**DIFFICULTIES IN ACCEPTING THIS THEORY.**—This is a crude recapitulation of the main points of Weismann's theory. I have but mentioned those portions which especially bear upon my argument. To explain atavism, or the reproduction of characters in one generation which had not been recognizable in the previous generation but had been present in some earlier generations, you will see that the theory demands that some at least of these ancestral ids should have remained unchanged through a long period—it may be for centuries. For Darwin's case (3) of the return of features peculiar to the ancestral rock pigeon, brought about by crossing barbs, spots, and fantails, is clearly a case of atavism occurring after centuries of domestic breeding and loss of the features in question. So in such a case of atavism we must, in the terms of this theory, suppose that in the act of fertilization there is a summation and preponderance of just that series of unchanged ids which now in development lead to the bringing into evidence of the atavistic ancestral features. In other words, the theory demands that the ids must be sin-

gularly stable in constitution—that they grow and multiply, but retain the same structure.

But now Weismann has to admit that, under certain conditions, the ids are modified in their structure. This admission indeed is contained in the idea that the individual hypothetical ids vary in their properties; and as, if we trace back these ancestral ids to their common source, they must all originally have been identical in structure, we conclude that at the same time they are both stable and capable of change in constitution. Here indeed is the crux of the theory. How are we to define and realize for ourselves the limits of alteration? Natural selection cannot explain the alteration, unless we fall back upon the far-away hypothesis of multitudinous separate acts of creation in the beginning of things—affording a large number of distinct idioplasms—and even this hypothesis does not work out satisfactorily.

In the example already given of crossing of the old-established breeds of barbs, fantails, and spots, we must imagine that all the ids of each breed have been, in the germ cells of successive generations, exposed to almost identical conditions, and, as a consequence, modified along the same lines. Exposed to the same influences in the course of many generations, it is almost inevitable that all must become modified, for if there were any large number of unaltered ancestral ids contained in the germ cells it would inevitably occur that sports and atavistic forms would frequently present themselves. But this does not happen. Each of these varieties of the pigeon breeds singularly true. How, in short, are we to picture some of them passing from germ cell to germ cell through all the long years in an ancestral condition? Put to this test, the theory breaks down; we cannot picture the necessary conditions. It is, in short, an absurdity to regard the nucleus of the germ cell as containing a colony of what are, to all intents and purposes, separate and independent individuals, some of which have for centuries retained properties of one order, some properties of another, to conceive the germ cell as a colony of individual living beings, for this is what the theory demands (4).

**DRIESCH'S DEMONSTRATION OF THE INCOMPETENCY OF THE THEORY.**—But it may be urged, What is the use of all this argument to kill a theory already dead? For dead it is, so far as regards the ids, and Weismann's theory without the ids is like Shagpat without the identical. The brilliant observations of Driesch (5), abundantly confirmed as they have been by others, foremost among whom must be mentioned Professor E. B. Wilson (6), of Columbia, and T. H. Morgan (7), of Bryn Mawr, show that the conception is untenable. If in a segmenting ovum we find that normally each of the blastomeres, or primitive segmenta-



tion cells, gives rise to one special series of organs or tissues, but if nevertheless the ovum of sundry animals can have its cells shaken apart at the two-, four-, eight-, and even sixteen-cell stage, and each separated cell can be found capable of developing into an entire, if dwarfed, individual, then, obviously, each time the nucleus segments there is no passage into the daughter nuclei of particular series of ids destined to lead to the development of one particular region of the body. Rather, the variation in structure of the different tissues must be, to employ Driesch's words, "a function of their relative position" ("ihre prospective Bedeutung ist eine Function des Ortes"). The existence of these hypothetical ids is absolutely disproved. I dwell upon this theory because to-night I want more especially to discuss, on account of its importance from a medical point of view, this matter of the inheritance or non-inheritance of acquired characters. I hope that I have proved to you that the groundwork upon which the negative view is based is of proved unsoundness. The fact that a theory by which a position is supported falls through does not, it is true, afford proof that the position is wrong, but when we find that the dictum of non-transmission of acquired characters does not wholly accord with medical experience, we may well ask: Can we gain a conception of the intimate nature of inheritance which is in accord with that experience?

INHERITANCE, TRUE AND FALSE.—My only regret is, that in striving to gain that conception, I shall have to inflict upon you yet another theory; my only apology, that that theory does appear to satisfy the conditions met with in man. First, however, it is necessary to lay down clearly what is not inheritance, for in medical writings and in ordinary medical parlance a terrible confusion prevails upon this point, and much that is certainly not inherited is commonly spoken of as being hereditary. There is, for example, no such thing as hereditary syphilis. There is congenital syphilis and there are, to employ Fournier's term, inherited "para-syphilitic" lesions, but "hereditary" and "congenital" are not and must not be regarded as interchangeable terms.

The confusion is due to the common error of regarding the individual as beginning his existence at the moment of birth and not until then, so that everything occurring before that moment is grouped in one category, everything after, in another. The chick, so to speak, is not a chick until it breaks open the shell; its status from the moment it ceases to be a new-laid egg—or, more strictly, the egg of commerce—until it emerges from the shell is not recognized in law, and fresh egg and chick are commodities of wholly different orders. But the individual existence of the chicken has already begun even before the egg



is laid, and what is true of the chick is equally true of the human being. The individual begins the moment that fecundation is accomplished, the moment the nuclear material of the spermatozoon fuses with the nuclear material of the ovum and these twain become one. Compared with the event, birth is seen to be of secondary importance, for the intra-uterine association of the embryo with the maternal tissues is but one means employed by a restricted number of species to insure the satisfactory nourishment of the individual during the earlier stages of development. The recognition of these facts is essential for any serious study of the problems of human inheritance. Any disturbance due to influence affecting the individual from without while *in utero* is *acquired*. It certainly must not be spoken of as inherited; it is an ante-natal acquirement or is of *congenital* origin. That alone is inherited which is the property of the individual at the moment he becomes an individual, which is a property of the germ plasms from which he originates, or is produced by the interaction of those germ plasms. The biologist has no alternative but to define inheritance according to the principle here laid down, nor have we, dealing with a limited field of biology, the right to modify terms in general scientific use for our own convenience.

Now, when we find that syphilis or tuberculosis acquired *in utero* during the later months is peculiarly severe and widespread in its manifestation, it is wholly unjustifiable to premise that the microbic germs of one or other disease could be present in either the conjugating ovum or spermatozoon, could pass into one or other of the blastomeres, in a latent condition, doing no harm to the developing ovum. The ovum would surely be destroyed or at the least be monstrous. Could it conceivably be present, it is more than debatable whether we could regard such a fortuitous inclusion as a part and portion of the germ plasm, and so a strict inheritance. However, I have already, at the Academy of Medicine in this city of New York, dwelt upon this subject (8). Suffice it to say that tuberculosis or syphilis of the new-born must, from every valid consideration, be an acquired congenital condition, not an inheritance. And, let me repeat, only that which is derived from the parental germ plasms is truly inherited.

It is to the germ plasm, the active matter in the germinal cells, and to the properties of that germ plasm that we must turn in order to gain our basis for any sound theory of inheritance. Weismann has done yeoman's service in emphasizing this fact. This germ plasm it is which conveys living matter from generation to generation.

GROWTH AND ITS ESSENTIAL NATURE.—Now, whatever life is, the fundamental phenomena or possession of living matter is the perform-

ance of work coupled with growth—the capacity manifested by that living matter to assimilate non-living matter of certain orders, to absorb it, to endow it with like properties, to convert it into matter like unto itself, into additional living matter, in doing which, work is performed. In other words, difficult as it is to conceive or picture to one's self the details of the process, growth is essentially a process of conversion, *a chemical process*, and any adequate theory bearing on the phenomena of growth must primarily be along chemical lines. We are ignorant of what it is in the structure of living matter which gives it those properties; we are, if possible, more ignorant of the physics of the process of growth, of the nature of the force which, acting upon or inherent in the constitution of living matter, leads to this continuous process of assimilation and conversion, and in our ignorance we are unable to separate the chemistry and the physics of the process; we must, that is, regard growth as a *property* of living matter. We must also for present purposes speak of the matter which is essential to and directly concerned in the activity of any one species or individual as a single substance which, following Nägeli, we can refer to as “*idioplasm*,” and our conception of the individual or of the separate cell-units forming that individual must be that in each we have to deal with two constituents, the *idioplasm*, or essential and directive living matter, and the *cytoplasm*, which is in the strictest sense non-living, or certainly unable to exhibit the whole series of vital properties apart from the idioplasm, and which consists of various formed elements developed and influenced by the controlling idioplasm, intimately connected therewith, it is true, but at the same time not an essential part of the same—the cytoplasm varying in its composition and nature under varying conditions which affect the idioplasm, the idioplasm under all conditions retaining certain cardinal properties.

That the constitution of the idioplasm is not absolutely but only relatively constant has also to be assumed. We are bound to recognize that it is capable of undergoing modifications within certain limits without loss of its cardinal properties, and this from the following reasons: Admitting, as we must, that the highest forms of animal and vegetable life have been evolved from the very simplest, that there has been an unbroken line of development of living forms from the simplest unicellular to the most complex multicellular; admitting also that in every act of reproduction, however simple or however complicated, the direct conveyance of the living matter of the parent into the offspring is to be demonstrated, that, in other words, the idioplasm of the primal living being has been continued on to successive and progressive generations, then we must admit that the idioplasm of the highest forms,

judging from its powers of controlling and directing the development of the highly complicated organism, is something very much more complex than the idioplasm of the unicellular organisms; that in the course of evolution this has undergone successive accretions of properties, and this accretion of properties is the manifestation and accompaniment of increasing complexity of constitution of that idioplasm.

This idioplasm must be capable of modification, either by its environment or under the action of some law of progressive modification. The fact that there exist to-day forms of life practically identical in the main details of structure with those of remote geological ages is against the latter view; we must hold that environment determines changes in the constitution of the idioplasm.

CHEMICAL THEORIES OF INHERITANCE.—THE ISOMERIC THEORY: It must now be asked, Can we imagine a chemical substance so constituted as to be capable of modification in its molecular constitution, and so in sundry of its properties, without undergoing complete change without other properties being lost?

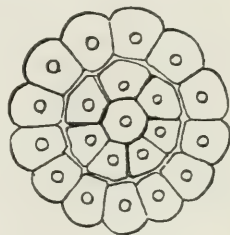
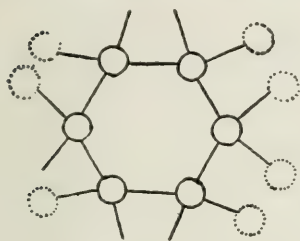
We can. If, as Prof. Walker, of McGill, points out to me, such relatively simple bodies as lactic and malic acids are capable of existing in more than one form—as levogyrous and dextrogyrous and optically inactive modifications—and this with no obvious alterations in their chemical properties (though physically they show different actions upon polarized light, and physiologically we find that certain bacteria can act upon one and not the other form), then, certainly, the much more complex proteid material which would seem surely to be the basis of the idioplasm may present a very great number of molecular arrangements, and each of these may be accompanied by slight differences in certain physical and physiological properties.

Certain recent observations have rendered this additionally probable. By our present method of conceiving and visualizing the structure of chemical substances we regard the carbon atom in the molecule as being situated at the centre of the tetrahedron and as capable of linking four other atoms or groups one to each of the corners or apices of the tetrahedron. A substance like malic acid having a single central carbon atom may, therefore, be built up in three ways, with the linked groups arranged in one relationship to each other, or in the reversed relationship, or the substance may be a combination of the two atomic forms. These are all the forms we can picture as existing according to this system. But now a fourth form of malic acid has been found which is more dextrogyrous in the polariscope than is ordinary dextrogyrous malic acid. And the salts of this new form of malic acid show slight but distinct variations, in solubility, etc., from the ordinary malates.



If this is so, there may yet further be molecular modifications of such a relatively simple substance as malic acid, and *a fortiori* idioplasm may be capable of an enormous number of modifications.

THE SIDE-CHAIN THEORY OF INHERITANCE.—The mode of the atomic arrangement in the idioplasmic molecule may, therefore, in part, explain the variation in the properties of that idioplasm seen throughout the animal and vegetable kingdoms. I say in part, for if we assume that the structure of the individual is primarily the outcome of the structure and properties of the idioplasm, then for each different form of living being, nay, for each individual being, we have to assume a different atomic structure of the idioplasm. Or, otherwise, we have to assume that the modifications of this idioplasm are infinite in number. This, it seems to me, asks too much. The matter cannot be quite so



simple. Such molecular modification may play some part, it is true, but our conception of the structure and modifications undergone by the idioplasm must be more elaborate. We must, I think, formulate a theory of structure somewhat akin to that laid down by Ehrlich (9) in his now well-known theory of the nature of immunity. We can picture to ourselves the primitive idioplasm as composed of a mass of material each molecule of which is formed of a central ring, in which there can be attached side chains and from which sundry side chains can be detached without the central ring being destroyed.

This conception, which upon first encounter appears revolutionary and opposed to our ordinary chemical ideas, is, after a little deliberation, recognized as being but a statement, in chemical terminology, of what has been for long years the accepted physiological conception of the nature of protoplasm. It is, if I may so express it, the fundamental—the essential—conception of the constitution of living matter; it follows logically and inevitably the postulate of assimilation and growth. Whether we agree, with the majority, to distinguish between the idioplasm and the cytoplasm of the cell, or prefer to speak simply of protoplasm, it must, I think, be recognized by all that we are bound to assume—for the process of assimilation and, again, in order to explain



the variation in structure and properties of the various cells of the organism—that there is a central basal substance to which become linked, more or less permanently, or more or less temporarily, those other secondary substances which, not in themselves protoplasm, modify the constitution of the protoplasm as a whole. And these secondary substances, we see, are necessary for the full manifestation of the properties of that protoplasm. This conception is, I acknowledge, difficult to harmonize with the prevalent elementary conceptions of chemical action and chemical constitution, but it is, nevertheless, essential for the physiologist and unavoidable. What is more (for I do not pretend to be a chemist), I learn that it is not opposed to the more recent deductions of the chemists concerning the nature and properties of the more complex carbon derivatives. In other words, it is by no means heterodox from an advanced chemical standpoint.

Accepting this view, it is not necessary to regard the molecules of idioplasm as at all times presenting their completed structure, with every side chain attached. On the contrary, we are free to conceive the molecules being laid down and being transmitted in a relatively simple form, some of the side chains only becoming attached when the molecules are brought into certain particular relationships with their surroundings. It is not necessary, for example, to hold that already in the ovum there is idioplasm identical in structure with that eventually present in the muscle fibres or nerve cells developed from that ovum. Rather, we must hold that in the ovum there is one common idioplasm of simple type, to which, when distributed in the various cells derived from that ovum, different side chains become attached, according to the relationships assumed by those cells, so that the cells of different orders are controlled and formed around protoplasmic or idioplasmic molecules composed of those central rings plus varying series of side chains. Indeed, I am prepared to go further and to state that the idioplasm possessing its full complement of side chains must be regarded as *ipso facto* incapable of initiating cell multiplication.

I base this statement upon the fact, to which I have more than once called attention during the last few months (10), that it is only cells which are undifferentiated, or which have reverted to a simpler less differentiated form, that are found to undergo division. Highly differentiated cells never multiply as such.

INHERITANCE IN UNICELLULAR FORMS.—If the primitive unicellular individual formed by this controlling idioplasm divides into two to form two individuals, each half will contain a portion of the idioplasm, and if the circumstances affecting the molecules of the new generation are the same as those affecting the parent forms, then this idioplasm will conti-

nue to assimilate to itself non-living matter and to endow it with its constitution and properties, and the individuals controlled by this idioplasm will correspond to the parent form and to each other.

But if the circumstances affecting the filial idioplasm vary from those affecting the parental, then these more unstable and loosely connected side chains will be the first to be influenced. The very act of assimilation (the surrounding medium varying in its composition) may lead to the substitution of other side chains, to slight variation in the composition of the idioplasm. And the cell or individual developed or controlled by the idioplasm will therefore vary from the parent form, while the products of division of this second generation, containing as they do this modified idioplasm, will exhibit like structural modifications. Here we have the simplest example of the inheritance of acquired characters.

There is, however, yet another property which we have to assume. It may be laid down as one of the great laws of biology that characters which are of the most recent acquirement are those which are most unstable, and are first lost; those which are oldest are the last to disappear. In man, for example, the first signs of generalized systemic weakness and imperfect development show themselves in connection with those properties which differentiate man from the animals most nearly allied, namely, in weakness and arrest of the higher functions of the nervous system, or, again, in susceptibility to certain specific diseases which are peculiarly apt to affect man, relative immunity toward which on the part of the healthy individual must be regarded as a comparatively recent acquirement. As my old teacher, James Ross, of Manchester, was the first, I believe, to point out, when there is progressive atrophy of the cells in the cortex of the brain, the first motor cells to show signs of that atrophy are those governing the muscles which differentiate man from other animals, namely, the opponens muscles of the hand.

Hence it has to be laid down that the attachment of these side chains, which are recently acquired, is relatively unstable, that such recent side chains are most easily detached, so that the idioplasm and the organism developed around that idioplasm are prone to return to their former condition or lose characters gained by recent progenitors. The more side chains become attached, the more complicated the structure, the more unstable the equilibrium; hence the greater the liability to revert. As Professor Walker points out to me, parallel conditions are to be recognized in organic chemistry. The old-established view of the existence of "radicles" to a large extent admits this principle; certain central atomic groups in a compound are seen to be more fixed and not to undergo change when the attached groups are removed and replaced.

Still more closely allied is what has been observed in connection, for example, with aniline. The composition of this is  $C_6H_5NH_2$ . Here the H atoms of the  $NH_2$  group can be replaced by other groups, by methyl ( $CH_3$ ) and ethyl ( $C_2H_5$ ) groups, etc., and it is found under certain conditions that, in carrying out a series of these replacements, the last group attached is the first to be split off and replaced.

We see this principle in action in the lowest forms of life. Contrary to what Weismann has laid down regarding parthenogenesis and asexual reproduction, it is comparatively easy to impress new characters upon the bacteria. By subjecting a growth of pigment-producing bacteria to the action of a temperature just below that which will cause their death, we can bring about a loss of pigment production, so that the rapidly succeeding generations are perfectly colorless, but gradually in the course of time the culture made from the original (heated) tube regains the power of pigment production. This may be in two or three days, or, again only after several transplantations at the end of two or three weeks, and when we remember that a bacillus divides and so forms a new generation in, on the average, something considerably less than an hour, it is seen that the acquired character may be impressed upon the race for some hundreds of generations (11). The more intense the alteration to which the bacillus is subjected, the longer and the more frequently the race is subjected to the altered temperature conditions, the longer it is before there is a sign of return to the normal. Translated into the terms of this theory, heat leads the idioplasm to have certain side chains, either modified or lost, and this modification or loss is inherited; but return to the normal environment leads the modified idioplasm in the process of growth and metabolism eventually to assume side chains of the same composition, the conditions of growth being similar to those under which the species originally acquired the side chain. Yet another solution, though it is one which I do not favor, is that not all of the molecules of the idioplasm undergo modification, a minority retain their original constitution, and, under favorable conditions, gradually come to preponderate.

SEXUAL CONJUGATION AND INHERITANCE.—How, next, does this theory bear upon sexual conjugation and its effects, for this also is met with in many unicellular organisms? I shall not take up the explanation of the development of male and female characteristics; this is too large a subject, but I would discuss how fusion of the idioplasm of two individuals affects inheritance. In that fusion we have a mixture of the two idioplasms, and, as already pointed out, these idioplasms, as a result of the varying influences which have acted upon them, tend to vary in certain particulars in their constitution. This fusion must be either



a mere admixture, so many molecules of one idioplasm becoming admixed with so many molecules of the other, or a true chemical combination. If we presuppose a mere mixture, we are led along the lines of Weismann's theory and have to regard the idioplasm of the individuals of one generation as being composed of idioplasmic molecules or ids which have been passed down from the long line of previous generations. I have already pointed out the difficulties in which we find ourselves if we accept this view. The other view largely, if not entirely, removes these difficulties, nor does it introduce any fresh crop of serious difficulties.

We may regard, then, the idioplasms from the two parent forms as undergoing a true chemical combination,\* the resultant idioplasm of the new generation being in truth a new idioplasm not possessing the identical properties of that of either parent, but being intermediate, tending in its characters and constitution toward the constitution of either one or the other according, it may be, to the number or chemical activity of the molecules of one or other parent entering into combination. Weismann supports his view by pointing out that for a certain period the maternal and paternal materials in the chromosomes of the daughter nuclei remain distinct, and reaches the bold and utterly unsupported conclusion that when the chromosomes fuse to form the irregular network pervading the nucleus, their constituents nevertheless remain distinct and sharply separable from those of the other chromosomes. But we have no evidence, in the first place, that the chromosomes alone contain the idioplasm, that chromatin and idioplasm are identical. Everything points to the fact that the idioplasm is contained in the nucleus, but we cannot with certainty advance further. It may be that the chromatin is but the cystoplasmic framework, the mechanism, as it were, by which the idioplasm is distributed.

If the germ cells of both parents possess certain loosely attached or unstable side chains of more recent acquirement, which are of like nature, there is no sufficient reason why the protoplasm of the offspring should not also possess them. We can thus realize how it is that abnormal features present in both parents may be equally or more prominent in the offspring. But in general we must recognize that, the parents varying in different directions, the tendency of conjugation is to preserve the mean, to bring about an approach to uniformity in the constitution of the idioplasm of successive generations of one species exposed to like influences.

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\* It may be asked, How can identical or almost identical substances undergo true chemical combination? Physicists nowadays freely recognize this possibility. Thus, everything points to the molecule of water being, not  $\text{H}_2\text{O}$ , but  $3\text{H}_2\text{O}$ ; numerous other examples might be brought forward.



I need scarce say that in these higher uncellular organisms which present conjugation the cell already presents a nucleus, and that everything indicates that this nucleus is the controlling and directive body in the cell—that it is the nuclei which undergo conjugation—and that, in short, we have to recognize that the idioplasm of the individual is contained in the nucleus. It is by no means necessary to conceive that the whole of the nuclear material is idioplasm, or that the whole of the idioplasm enters into chemical combination with the molecules derived from the conjugating germ cell, molecule for molecule. I mention this in passing to indicate that it is not necessary to assume that when polar bodies are extruded the material forming them is identical with the idioplasm of the remaining nuclear material. The difficulties in explaining polar bodies and the reduction of the nuclear substance are no greater by this than by Weismann's theory. The exigencies of time demand that I should not enter in detail into the consideration of these subjects. Rather, I must give the broad outlines of the theory and pass on to consider inheritance in multicellular organisms.

INHERITANCE IN MULTICELLULAR FORMS.—Every multicellular organism arises from a single cell, the fertilized ovum, itself in all sexually produced forms the result of fusion of a male and female cell, of the ovum and spermatozoon. Studying the method whereby this one cell gives rise to the adult multicellular organism, we see that by successive acts of division this one cell gives rise to all the cells of the body. In the course of this process its nucleus divides and redivides, and that in such a way that at each division like portions of the nuclear material pass into each daughter-cell. This regular distribution of nuclear material affords a sound ground for believing that there is an equally regular and uniform distribution of idioplasm into each cell. Now, I have already pointed out the value of Driesch's observations in overthrowing Weismann's contention that there must be a qualitative difference in the idioplasm distributed to the daughter-cells. We have absolutely no ground for believing in any such qualitative difference; on the other hand, it is a legitimate inference that the idioplasm is modified by its environment. To take the simplest example—a multicellular organism composed of a spherical mass of cells. Those cells which come to form the peripheral layer of the individual are subjected to a series of reactions quite different from the series telling upon the centrally situated cells, and it requires no stretch of the imagination to predict that in the process of assimilation and growth on the part of the idioplasm of these outer cells, that idioplasm tends to be altered in its constitution as compared with the idioplasm of the centrally situated cells. So that the results of division of the peripheral cells, if retained in the same

environment, will tend to reproduce the characters impressed upon the parent cells, and so that, if this subjection to the special set of conditions is continued and impressed upon this order of cells for a sufficiently long period or with sufficient intensity, even when pressed or passing into other environment, the cell generations will retain these modified conditions, so that, for example, cells of mesoblastic origin will tend to maintain characters different from those derived from epiblast, and this whatever the ultimate position of the cells in question.

In fact, as a first law, we may lay down with Driesch that the structure of the cells in a multicellular organism is a function of their position, and this because the position of the cell determines the modification undergone by its idioplasm. As a second law we may lay down that the greater the change impressed upon the idioplasm of these cells and the longer that idioplasm is subjected to the conditions inducing this change, the more permanently will the daughter-cells exhibit the peculiar alteration in the idioplasm, with consequent modified structure wherever they find themselves in the economy. We have, in short, to recognize that two orders of forces determine the structure of every cell in the body : (1) The previous influences acting upon its idioplasm and causing it to be of a particular chemical constitution; and (2), the position in which the cell finds itself and the forces acting momentarily and immediately upon its idioplasm. Or, briefly, these two series of forces are inheritance and environment, and inheritance and environment determine the constitution of the idioplasm and the structure of the cells.\*

Following this line of thought, we can understand how it comes to pass that the body cells and the germ cells in the higher and more complex organisms become so sharply divided, how it is that the body

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\* To the worker in bacteriology the hesitancy on the part of biologists in general to accept environment as a most important factor in originating variation is almost incomprehensible. Nothing is more remarkable in the study of the lowest unicellular forms of life than this effect of environment in bringing about changes in character, changes which not only tell upon a limited series of generations (as I have already pointed out), but are permanent in their nature. By no means, save altered environment, could Hansen (12), taking isolated yeast cells or "spores" (100 per cent. of which, when cultivated under ordinary conditions, gave rise to spore-bearing forms) and subjecting these to the highest temperature at which growth could still occur, obtain a race or variety of yeast which now, after twelve years, has continued to grow under ordinary conditions without once developing spores. By no means save altered environment is it possible to explain Vincent's conversion of the absolutely harmless potato bacillus or, again, the *Bacillus megatherium* (by long-continued sojourn within closed collodion capsules in the peritoneal cavity of animals) into forms profoundly pathogenic, and fatal to rabbits, mice, and guinea-pigs in the course of a few hours (13).

The argument that phenomena observed in unicellular organisms cannot be applied to multicellular organisms is, to say the least, a severely strained argument. The extent to which environment acts as a factor may, it is true, be diminished in these, but surely it cannot be regarded as being eliminated and rendered negligible.

cells are no longer able to reproduce the whole organism. Their idioplasm has become altered in certain directions to such an extent that it is able, under favorable conditions, to divide and reproduce cells of like nature, but the very extent of the modification it has undergone has taken from it that constitution or structure which is necessary to allow it to reproduce each and every order of cells which together form the individual. The germ cells, on the contrary, undergo no such extensive changes in constitution—as a function of their position in the organism, their idioplasm as it grows and is distributed into the successive germ cells retains its fundamental constitution with but little alteration, and when these germ cells are discharged they and their idioplasm, brought into like relationships to those affecting the parent germ cells, undergo the like series of developmental changes, and reproduce the whole series of cells, tissues, and organs characteristic of the species to which they belong.

In the terms of this theory, therefore, inheritance essentially depends upon the chemical constitution of the idioplasm or the life-bearing or biophoric protoplasm of the germ cells, not upon the number of the separate ids or biophores or ancestral plasms or pangenes contained in the idioplasm; and variation, whether slight and individual or extensive and leading to the production of species, is ultimately the expression of modification in the constitution of that idioplasm brought about by environment. Whereas Weismann's theory lays stress upon relative fixity in the constitution of the idioplasm, this theory admits freely the capacity for change in structure of the same. So long as the surrounding conditions are unaltered the idioplasm is unchanged; alter these conditions and the idioplasm is liable to variation in constitution.

ATAVISM.—Lastly, in regard to atavism and reversionary degeneration of the cells of the individual, this conception of the idioplasm with attached side chains, which are more firmly or more loosely attached, affords a perfectly adequate explanation. The more advanced the organism the greater the number of these attached side chains, the more recent the attachment of a side chain the more unstable that attachment. As a consequence, any profound disturbance will, according to its intensity, tend to cause the loosening and removal of the more unstable side chains in general in the order of their stability of attachment. And as the structure of the individual and of the individual cells is the expression of the constitution of the idioplasm, of the germinal idioplasm, and of the idioplasm of the individual cells, so according to the intensity of the disturbance will there be greater or less reversion to an earlier stage in the developmental history.



Let us now apply this theory to those special problems which I have referred to as being of peculiar interest to us as medical men. Can acquired defects be transmitted? In seeking to answer this question, at least three orders of phenomena have to be recognized and distinguished. These are:

1. THE NON-INHERITANCE OF ACQUIRED MUTILATIONS.—To these I have already referred. We cannot conceive of the direct transmission of identical lesions of the order from parent to offspring. At most we can conceive of the possibility of indirect effect where the mutilation is extensive or affects organs playing an important part in general nutrition. If there is impoverished general nutrition we can understand that this can affect the germ cells along with the other cells of the organism, that the lack of due assimilation or the excess of sundry internal secretions which, in consequence of lowered general metabolism, have been imperfectly neutralized, by telling upon the blood and lymph, may lead to modification of the idioplasm of those germ cells, with the possible resultant imperfections in the growth of the fertilized germ, everything depending here upon the combination of the modified germ plasm of the mutilated individual with that of the other parent. If the number of molecules of this other idioplasm or the constitution of the same is adequate to counteract the loss of side chains in the idioplasm of the mutilated individual, there may be no recognizable effect. Or, on the other hand, the effect upon this latter idioplasm may be so serious as to lead to inherited defects in the offspring. But clearly these defects will be of a different order and a more generalized type; they will not be identical with the mutilation. There will be no direct transmission of acquired defects of this nature.

2. THE INDIRECT TRANSMISSION OF ACQUIRED DIATHESIS.—With reference to diathesis, this also may be laid down, that acquired disease and the effects caused by disease cannot *in general* be transmitted in such a way that the offspring presents lesions identical with those produced in the parent, though it has to be recognized that there is the possibility of modification in that offspring due to the parental disease. There is the possibility of a certain amount of transmission, not of the identical local lesion caused by the disease in the parent, but of a modified or impaired condition of the germ plasm. We must recognize that constitutional disease, by leading to disturbance in the activity of important organs, tells not only directly upon these organs, but secondarily upon other organs. It leads, for example, to an altered condition of the blood and so to altered nutrition of all the cells of the body. Among other cells, the germ cells may be directly affected, their idioplasm modified and the offspring directly influenced. Conditions



affecting the parents are capable of influencing and modifying the descendants. It is this which is forcibly brought home to us in our medical work. It is changes of this order which are almost inevitably neglected by the morphologists, for they are not within their ken. The changes brought about in the tissues by what is essentially chronic intoxication may be so slight as to be inappreciable. Microscopical examinations may reveal nothing; only by their physiological effects can their existence be recognized. It is in the study of these conditions and their effects that medicine can afford the most valuable aid in the matter of inheritance.

All infectious diseases are intoxications. If a parent is the victim of syphilis, it is obvious from febrile and other phenomena not merely that there are local toxic phenomena at the foci of growth and multiplication of the germs of the disease, but that the toxins pass into the general circulation. They may produce no immediate structural changes in the cells and tissues, but we have evidence that the protoplasm of various tissues is affected, although the results of the disturbance may only show themselves after long years. Indeed, the only explanation we can give of many remote effects of syphilis is this, that during the active period of the disease there has been a change wrought in the constitution of the cells of sundry tissues, slight and subtle, it may be, but sufficient to lead to premature exhaustion of the idioplasm of those cells. It would be absurd to argue that the immature germ cells lie absolutely dormant in the organism. They need nourishment, they assimilate; they are thus also apt to absorb circulating toxins, and their idioplasm must be affected in this act. Hence, while syphilis as such is not inherited, the toxins of the disease must be regarded as prone to set up molecular disturbances in the germinal idioplasm, and the offspring may show, not syphilitic lesions, but parasymphilitic lesions—various form of arrested and imperfect development of different tissues due to the intoxication and therefore modification of the germ plasm while still a portion of the parental organism.

Parental intoxication, therefore, is seen to be capable of directly affecting the germ cells, and if there is no direct transmission of the effects of such intoxication, certainly there are indirect effects. In demonstrating the truth of this statement, it must be freely admitted that conjugation and intra-uterine existence introduce grave complications. In fertilization it is obvious that the idioplasm of the sound parent may largely neutralize the defective constitution of that of the diseased parent, while we have constantly to guard against ascribing to defects in the germ plasm conditions acquired during intra-uterine life. If the mother is the subject of any toxic state (to use the broadest pos-

sible phrase), not merely may the ovum be directly affected prior to fertilization, but in the course of foetal existence the organism of the offspring, deriving its nutrition as it does from the maternal blood, is liable to be affected and disturbed by circulating toxic substances and the development of the different tissues to be correspondingly influenced. The only conditions we can safely study are those in which the father is the subject of disease or intoxication, the mother exempt. Nor is it easy in cases of infectious disease, or even in frank intoxications such as the alcoholic, to be perfectly sure regarding maternal exemption.

Paul's observations, however, upon the effects of lead poisoning afford a most convincing demonstration along the required lines (14). Plumbism is peculiarly a trade disease. It particularly affects those following certain occupations; thus often the male wage-earning member of the family is alone exposed. Studying the history of thirty-two pregnancies in which the father was the victim of saturnine poisoning, the mother free from the condition, Paul obtained the following remarkable statistics:

Twelve resulted in death of the foetus before term (eleven abortions, one child born dead).

Twenty children were born alive, of which eight died during the first year; four died during the second year; five died during the third year; one died later; two alone were found to be living, one aged twenty years, the other only twenty-one months.\*

In connection with the effects of paternal syphilis, Fournier (15) has contributed strong evidence along the same lines, pointing to the great frequency of arrested development of various orders, from intra-uterine death to infantilism. To his statistics objection may be made that certain of the infants recorded by him probably suffered from the actual disease acquired *in utero*, secondary to local infection either of the placenta or of the membranes. Discounting this possibility in a certain proportion of cases, his figures still remain very remarkable. But what is needed is a more searching study of these cases of defective children, the offspring of a healthy mother and an infected father, to make sure that we are dealing with parazytiotic as distinct from zymotic lesions. In connection with the subject, Gheorghiu, studying malformations, has pointed out the remarkable frequency with which there is, on inquiry, obtained a history not merely of the mother, but of *either*

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\* Legendre, in his essay in Bouchard's *Traité de pathologie*, Vol. I (which in the first place directed me to Constantin Paul's admirable article), gives a table of 141 pregnancies which I cannot find in the paper referred to. Possibly this is from a later article by the same author, but the proportion of abortions as given by him is so much larger that I doubt if this can be the case.

father or mother, having been a sufferer from acute or chronic infectious disease at the time of conception (16).

3. THE DIRECT TRANSMISSION OF ACQUIRED CONSTITUTIONAL STATES.—In the above-mentioned series of phenomena we have dealt, as I say, not with the direct transmission of acquired conditions, but with the deleterious influence leading to general defects of development and due to the action of toxic agents upon the germ cells prior to conception. Can we advance further and see evidences of direct transmission of acquired constitutional states? I think we can.

If, for example, an animal acquires immunity to a disease, we are convinced that the process of acquirement is a chemical process; that the action of the toxine of the disease has been to set up certain molecular changes, certain alterations in the composition of the cell substance, so that that cell substance now responds in a different manner when brought into contact with the toxine; and once this modification in the cell substance is produced, the descendants of this cell retain the same properties, that immunity to one special disease is not merely a momentary, but is a more or less lasting, state of the system. It is true that it tends not to be permanent; we see that, where it is attainable, the more prolonged and the more severe the changes set up in the process of immunization, the longer it lasts; we recognize, further, the action of the law that properties of most recent acquirement are soonest lost, and that there is a distinct tendency for the condition, or acquired state, of the cells to pass away. Nevertheless, we admit that inheritance of the acquired condition has to be granted in the case of the body cells in this connection. Here, again, if these processes obtain in connection with the body cells we must logically admit their action in the case of the germ cells. The idioplasm of body and germ cell is of like origin and must be susceptible to like influences.

The toxines circulating in the blood of the individual undergoing immunization must also affect the germ cells; they must acquire immunity, and the individuals developed from them must, subject to the law of loss already noted, have the same properties. Now, as a matter of fact, this transmission of acquired immunity has been occasionally noted, where, for example, both parents (rabbits) have been rendered immune to the *Bacillus pyocyaneus*, the offspring have been found more refractory to pyocyaneus infection, but in general the observations have been negative. This, as I have hinted, is only to be expected on account of the easy detachment of, if I may so express it, newly acquired side chains. It is, however, legitimate to suppose that successive immunization through several generations will cause the new side chains to become more and more fixed, and that racial immunity



is brought about by these means, a view more probable than the alternative of mere "survival of the fittest."\*

Conversely, in those cases where immunity is not developed, in the case of chronic conditions like tuberculosis, we can, along these lines, comprehend how the toxins weaken the germ cells along the same lines as they weaken the general tissues of the body, and as the resistance of the body in general to a special microbe and its products becomes less and less, so also the idoplasm of the germ cells becomes less and less resistant, and so from parental disease the offspring gains a peculiar susceptibility to one special disease. So that, in short, from disease acquired by the parents a particular diathesis is developed, a special susceptibility to the particular form of disease.

Here Weismann would make the somewhat subtle distinction that we are not dealing with the direct transmission of acquired parental defects—that the toxins produce these results not by acting on the body cells, but by direct action on the germ cells—that the inheritance is blastogenic, not somatogenic (17). This is a sorry and almost Jesuistic play upon words. Let us grant that they are of blastogenic origin; they are nevertheless of individual acquirement. The individual consists of body plasm and germ plasm, and whether the defect tell primarily or secondarily upon the germ plasm of the individual, we have here examples of conditions acquired by the individual being transmitted to the offspring.

But we can go further. Exogenous and bacterial intoxications are not the only intoxications; we recognize yearly more and more the existence of states of truly endogenous intoxication, auto-intoxications—of disturbed states of the constitution due to disturbances in glandular activity or to excess of certain internal secretions or of the substances ordinarily neutralized by the same. Such disturbances, acting on the germ cells, would be truly somatogenic.

If gout and the gouty diathesis are, as many hold them to be, of the nature of true auto-intoxications, if in a given percentage of cases (in France twelve per cent., according to Bouchard) the gouty state shows itself in those giving an absolutely negative history of gout in their progenitors, then we are at liberty, I think, to regard the gouty diathesis as an example of truly somatogenic acquirement of an inheritable constitutional state.

Defect in bodily metabolism has led to intoxication of the germ cells, and the offspring show a peculiar liability to be the subjects of

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\* It goes without saying that where both father and mother are immunized through successive generations and the foetus—and its germ cells—acted upon by the maternal blood and milk, the development of acquired inherited immunity should become yet more assured.



intoxications of the same order. Here what is transmitted is a constitutional state, and that constitutional state may manifest itself in more than one way, but no one will deny that this is truly inheritance of an acquired condition.

We must, therefore, I hold, be prepared to admit the possibility of the transmission in inheritance of certain orders of acquired constitutional conditions—we must see that it is not necessary, with Weismann, to deny strenuously the inheritance of each and every order of acquired defect, and that along the lines of some such theory as that outlined this evening we gain a fuller harmony between theoretical considerations regarding the nature of inheritance and the facts as they present themselves to us day after day.

CONCLUSION.—Within the time at my disposal it has been impossible to touch upon many aspects of inheritance which interest us as medical men—upon spontaneous variations and their transmission, upon inbreeding and marriage of consanguines, upon degeneration as distinct from atavism, upon the particular problems of inheritance of nervous conditions, to mention but a few. It seems to me, however, that this conception of the properties of idioplasm is adequate to bring together and harmonize the facts we possess concerning all of the above-mentioned conditions.

Let me conclude with Weismann's apology: "Hypothesis, even when not absolutely right, may be of value in advancing our knowledge, if only they are relatively right, *i. e.*, when they correspond with the state of existing knowledge. They are like the feelers which the short-sighted snail stretches forth on its darkened path, testing this way and that, and withdrawing them and altering the route so soon as they come across any obstacle." (18).

I must, gentlemen, ask your forgiveness for bringing before you a subject so far outside the line of general medical thought, and for having inflicted on you so much that is theoretical. That was not my intention when I sat down to prepare the paper. I had intended to indulge in the main in a destructive criticism, to point out how Weismann's and allied theories fail to satisfy certain orders of conditions presenting themselves to medical men; but as I proceeded with the task it became obvious that mere destructive criticism was valueless, that it became imperative to present an alternative theory which for many months—I may truly say years—had been simmering within me, unexpressed.

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# NOTES ON THE ACTION OF HEROIN AS COMPARED WITH THAT OF THE OTHER DERIVATIVES OF OPIUM.

BY

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Every physician has many times realized that the therapeutic agents at our disposal fail us in critical moments. In no instance is this more frequently or more strikingly brought home to us than in the use of opium or of its alkaloids. In not a few of our patients the desired effects are counteracted on account of the nausea and vomiting which are excited. This occurs at a time when rest and quiet are essential to the progress of the patient. In all cases almost without exception, constipation and loss of appetite follow the continued use of morphine or opium, which is necessary in some chronic conditions. Another disadvantage is that the layman of the present day is unfortunately too familiar with certain of the therapeutic properties of the drug without being aware of the danger which attends its use. The lethal dose of both morphine and codein is not far removed from the amount necessary to obtain the therapeutic action. The greatest drawback, however, to the physician in the employment of these drugs, particularly in chronic conditions and also in neurotic individuals, is the possibility of the formation of the drug habit. Any medicinal agent, therefore, which combines the desirable effects with the lack of its dangerous properties, must be received as a valuable acquisition among our therapeutic remedies. Heroin has been found in certain conditions to occupy this desirable position.

The drug was introduced by Dreser of Elberfeld about two years ago. At that time he was working on the action of codein and also on its relation to morphine. He found it to be a methyl derivative of this alkaloid, and determined to answer the question as to whether this derivative had a greater effect on the respiration than any other that might be formed. During the course of his research he observed that the diacetic acid ester of morphine affected the respiratory system to a greater degree than morphine itself. This synthetic product he called heroin.

Heroin is a white crystalline powder with a slightly bitter taste. It is insoluble in water, but readily dissolves in a weak solution of acetic or sulphuric acid. In its formation two hydroxyl groups of morphine

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are replaced by acetyl radicals. The dose is from gr. 1-20 to gr. 1-6. In comparing the lethal dose of heroin with the therapeutic dose, we find that the former is one hundred times greater than the latter, whereas with codein the fatal dose is but ten times the amount usually prescribed. Recently the hydrochloride of heroin has been introduced by Eulenberg. It differs from heroin in that it is soluble in water and may be administered subcutaneously. The dose is the same as that of heroin.

As to the mode of administration, heroin is usually given in powder made up with saccharum album or in solution with weak acetic or sulphuric acid. Triturates containing gr. 1-12 or gr. 1-6 are on the market.

The physiological action of the drug may be described as follows:—Externally and locally applied to the unbroken skin, it has practically no effect; from mucous membranes however it is absorbed and exercises an anodyne action.

On the digestive system in medicinal doses after repeated administration, heroin causes dryness of the pharynx and slight irritation of the fauces. There is no disturbance of the stomach, the appetite remaining unimpaired. Some observers have noticed slight nausea after the use of the drug. Morphine is stated to cause a hyperacidity of the gastric juice, but after even very large doses of heroin we have failed to observe any such effect. One patient to whom a very large dose was given experienced no gastric disturbance whatever.

On the heart and circulation the drug appears to exercise very little action. In over-doses it causes failure of the circulation, but not till some time after the respiratory system has been profoundly affected.

It is on the respiratory system that heroin exercises the greatest effect. It slows the frequency of the respirations and increases the depth and strength of inspiration. Its action is on the respiratory centre. Our knowledge in this respect is due to the careful and convincing experiments of Dreser, who demonstrated the effect of the drug by the graphic method.

On metabolism, we find the exhibition of the drug causes a profound alteration. It diminishes the amount of oxygen used and lessens the amount of carbon dioxide eliminated. In this way it slows metabolic processes. Dreser demonstrated that the oxygen in the blood is not diminished but rather increased after the employment of the drug. From the action of heroin on metabolism it is said to be an anti-pyretic, but all observers are not agreed on this point. Certainly no definite lowering of the temperature was observed in any of the cases to which it was administered in the Royal Victoria Hospital.

On the nervous system the drug in moderate doses has very slight



effect on the higher centres. In very few is there noticed any narcotic effect, unless the dose administered is large. A sense of malaise and depression may, however, be present. The respiratory centre is most affected by the use of the drug and also the cough centre. The cardiac and vasomotor centres are not influenced by medicinal doses. The drug kills by failure of the respiratory centre. In the cat, large doses cause generalized convulsions, its action in this respect resembling morphine. The peripheral nerves are dulled. Reflex action is lost in man after large doses are administered.

The indications for the therapeutic use of the drug are very apparent from the preceding remarks. Leo has aptly compared its action on the respiratory system to that of digitalis on the circulation. We have seen that it slows respiration and increases the force of the respiratory muscles. In dyspnoic conditions, whether due to pulmonary, cardiac, or renal disturbance, Leo has found it to render very valuable service. In those conditions where the mucous membranes of the bronchial passages are swollen and where there is increased secretion, it is of special value. The air has a longer time to traverse the obstructed passages and is drawn in and expired in greater volume and in increased force. In such conditions, which are frequent in elderly people, where morphine can be employed only with the greatest caution, we can administer heroin with safety.

Heroin has been described also as "a respiratory stimulant and a sedative to the mucous membrane." This being the case all irritative coughs which act injuriously on our patients, as in acute and chronic bronchitis and the early stage of pulmonary tuberculosis, laryngitis, pleurisy and pneumonia, ought to be affected by it. It is just in such conditions it has been of undoubted service. Codein, which is employed also in such conditions, is at times very disappointing. The respiratory rate is not influenced by codein and its continued use, in doses likely to be effectual, causes at times a troublesome diarrhoea.

As an analgesic it is inferior to morphine in this respect. Eulenberg, who has used the hydrochloride of heroin subcutaneously, considers that its value has been much underestimated in this respect. Locally, the drug has been used by Myrtil in pelvic inflammations with satisfactory results.

Strube regards the drug as indicated in all those conditions of dyspnoea or irritative cough for which one has up to the present, used morphine or codein, being superior to the latter on account of its action on the respiratory centre, but inferior to morphine in its narcotic effect.

Untoward effects are seldom observed when the drug is carefully administered. In a few cases, nausea and vomiting have been met

with. In eighty-two cases in which it was employed in the Royal Victoria, no such effect was observed. No tendency towards the formation of a habit has been observed, although Harnack has indicated such a possibility. Strube states that further observations are necessary on this matter.

During the past two years several observers have published the results obtained from the therapeutic use of heroin. Floret was the first to do so, and he states that in only four out of twenty-five cases of pulmonary tuberculosis was the drug ineffectual. In three cases of asthma improvement was very rapid. In pain, especially when due to disturbance of the abdominal organs, it was inferior to morphine. Leo reports that out of thirty cases, consisting of two cases of uræmic dyspnœa, eight cases of chronic emphysema, five of bronchial asthma, and fifteen of chronic bronchitis, in only three, one of emphysema and two of chronic bronchitis, did the drug fail to relieve. Thermisch of Philadelphia has reported on the use of heroin in cough, and in two cases out of thirty no improvement followed the use of the drug. Both of these patients were suffering from pulmonary tuberculosis, one with extensive cavitation in the left lung and the other in the latest stages of the disease.

Einhorn observed improvement in three out of four cases of pulmonary tuberculosis, in the fourth case the drug was beneficial only for two weeks. In five out of seven cases of asthma the result was satisfactory. In two cases of chronic bronchitis the result was good in one case and in the other no improvement followed its administration. In three cases of cardiac dyspnœa the symptoms subsided in two and in one no benefit was observed. In two cases of cancer of the stomach and two cases of gastralgia, marked improvement resulted. In a case of tabes with gastralgia and enteralgia the pains were alleviated.

The drug has been used in the Royal Victoria Hospital during the past eighteen months. During this time we have had an opportunity of observing its effect in eighty-two cases. In twenty cases of pulmonary tuberculosis the drug proved beneficial in sixteen, lessening the cough and permitting the patient to have a comfortable night's rest. No effect on night sweats was observed in any case. In ten cases of acute bronchitis, the drug proved of value in every case, the cough was lessened and the sense of oppression relieved. In four of these cases the bronchitis was a complication of typhoid fever, but in none of them was there any effect upon temperature. In fourteen cases of chronic bronchitis and emphysema and eight cases of chronic bronchitis, there was improvement in every case. In two cases where morphine had been administered previously to the use of heroin and also after it had been used, the patients requested the heroin instead of the

morphine. In four out of five cases of bronchial asthma the drug was very effectual. In one case it was useless. One patient complained of dryness of the throat after the use of the drug and also of slight dryness of the cough. This may be counteracted by the use of small doses of potassium iodide. In two cases of abscess of the lung the drug as used in one with much benefit, but in the other its action was very fleeting. In one case of bronchiectasis the drug exercised a beneficial influence. Heroin was used in three cases of lobar pneumonia and two cases of bronchopneumonia, the cough being rendered slightly less troublesome. In five cases of pleurisy the distress was relieved. In three cases of endocarditis with marked dyspnoea in which the drug was employed, there was definite alleviation of the distressing symptoms. The drug was used in one case of aneurism of the aorta to relieve pain. It proved satisfactory in this case but in one case of brain tumour and in one case of abscess of the brain the headache was not relieved by the exhibition of the drug. For the root pains of compression myelitis the drug was used in two cases, but it did not compare with morphine in its effect. It was employed in two cases of carcinoma ventriculi with slight benefit. In two cases of morphinism, the drug was used with good effect in one but in the other its action was not satisfactory.

From our experience with the drug the following conclusions may be drawn:—Heroin may be regarded as a valuable addition to our therapeutic agents. It is superior to morphine or codein in irritative cough. In dyspnoic conditions it is of special value. As an analgesic it is inferior to morphine. Heroin hydrochloride should have further trial before a definite statement is made in this respect. It is less toxic and therefore safer than morphine or codein. We are as yet unable to state whether the habit is likely to be formed or not.

## SARCOMA OF THE NASAL SEPTUM.\*

BY

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The history of this case is briefly as follows:—

T. C., æt. 25, consulted me on the 12th March, 1900, complaining of obstruction in the left nostril, associated with frequent and alarming attacks of epistaxis of one month's duration. He had lost eighteen pounds in weight during the previous month, which he attributed to loss of blood; and, owing to weakness, he was compelled to resign his position as foreman in one of the departments of a steel manufactory in Cape Breton.

The nasal obstruction was first noticed about November, 1899, and gradually increased from that date. The organs, as far as could be ascertained, were normal. Examination of the left nostril revealed a bluish gray tumour of soft consistence and about the size of a walnut, situated at the upper anterior half of the quadrilateral cartilage. It was irregularly rounded and very vascular, as proved by the fact that the slightest manipulation with a probe provoked bleeding. Immediate removal of the growth was advised, and the patient consented.

I cleansed the nostrils thoroughly with an antiseptic solution, and applied freely to the tumor a glycerine alcoholic solution of suprarenal extract followed by an application of a ten per cent. solution of cocaine. The ischæmic effect of the suprarenal solution and cocaine considerably reduced the size of the growth and enabled me to engage it completely with the cold snare. I removed it very slowly, and cauterized the base with the galvano cautery. The loss of blood during and after the operation did not exceed one ounce.

The growth was very superficially attached to the septum, and as no induration was present, a more extensive operation was not indicated. I pointed out to the patient the dangers of recurrence and advised him to have his nose frequently examined. He has not followed my advice, but I heard indirectly six months after the operation that he was enjoying the best of health.

Dr. A. G. Nicholls summarised his conclusions with reference to the tumour as follows:—

“On the whole the specimen gave the impression of a myxoma, with some dilatation of the lymphatics, and showing a distinct tendency to sarcomatous degeneration.”

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\* Read before the Montreal Medico-Chirurgical Society, March 23, 1901.



# RETROSPECT OF CURRENT LITERATURE. --- Medicine.

UNDER THE CHARGE OF JAMES STEWART.

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## Croupous Pneumonia.

GEORGE W. MORRIS. "Croupous Pneumonia, A Clinical Study of 500 Cases from the Records of the Pennsylvania Hospital." *The Amer. Jour. of the Med. Sciences*, June, 1901.

This interesting and important clinical study deserves more than a passing notice, and if space permitted it might well be fully reproduced in this column.

Of the 500 patients admitted, 125 died (25 per cent.) Seven became phthical. The effects of the habitual use of alcohol, Dr. Morris claims, are seen in the higher mortality among German and Irish patients as compared with that among the Russian Jews, who, while generally ill-nourished, are more temperate in the use of alcohol. Further concerning intemperance, his analysis shows that of 34 patients known to have been drunkards, 23 died, or 67 per cent.

The mortality was lowest in the second decade, of which the mortality was 18 per cent. Labourers, teamsters and stevedores showed a mortality of 34, 50 and 46 per cent. respectively.

| Site of the Lesion.      | Number<br>of cases. | Per cent.<br>of the 500. | Mortality<br>percentage. |
|--------------------------|---------------------|--------------------------|--------------------------|
| Right lower lobe . . . . | 145                 | 29                       | 18                       |
| Left lower lobe. . . .   | 115                 | 24                       | 13                       |
| Both bases . . . . .     | 60                  | 12                       | 48                       |
| Right apex . . . . .     | 55                  | 11                       | 20                       |
| Whole right lung . . . . | 45                  | 9                        | 26                       |
| Whole left lung. . . .   | 36                  | 7                        | 20                       |
| Left apex. . . . .       | 20                  | 4                        | 25                       |
| Both apices. . . . .     | 4                   | 9                        | 40                       |
| Right middle lobe. . . . | 14                  | 2                        | 21                       |
| Undetermined . . . .     | 7                   |                          |                          |

By a review of this table it may be seen that in 323 cases the right lung was involved.

Apical pneumonia was found more frequently in the first and third decades of life, 20 cases and 15 cases respectively. The temperature record shows that highly febrile cases are much less to be feared than slightly febrile ones. The spring months of the year, April and May, show the greatest prevalency of the disease. The chill was noticed in exactly 50 per cent. of the cases according to the notes, but the writer suspects its presence in a considerably larger proportion of cases. Three hundred and one cases terminated in crisis, seventy-four in lysis. The highest number of cases terminated in crisis on the eighth day, 58; on the seventh day, 43; the ninth, 42; the sixth, 34; and the tenth, 30. A pseudo-crisis, recognized as a fall below 99° F. with a prompt rise to 102°, was observed in 54 cases. There were 57 patients who had suffered on a former occasion from pneumonia. Albumin with casts was found in the urine of 245 patients, while the urine of 78 patients showed albumin alone.

Of complications, jaundice (18), delirium tremens (17), typhoid fever (15), and pleural effusion (12), were the most common, and greatly influenced the mortality of the disease. Upon the question of relapse this analysis has not cast very much if any light. Dr. Norris does affirm, however, that two days after the crisis of a seven-day attack in a child, an infection of the same lung took place. Another case is cited in which an infection of the sound lung was observed twenty days after recovery from the disease in that first involved.

The treatment has been expectant and symptomatic. Venesection has been of great benefit to overcome cyanosis and marked dyspnoea. Wet or dry cups and the icebag for the relief of pleuritic pain, opium, ammonium carbonate, etc., were used, as indicated. "Oxygen inhalations were apparently the means of tiding a number of cases over the critical period.

### **Pernicious Anæmia.**

HORACE C. COLMAN. "Pernicious Anæmia with an Analysis of Eighty-seven published cases, and an enquiry into the After History of Twenty-two reported cases. *The Edinburgh Medical Journal*, March and April, 1901.

Dr. Colman reviews at some length the physiology of the blood, especially those views which refer to the normal blood destruction, and concludes that there is a normal active destruction of red corpuscles going on in the liver. In pernicious anæmia this destruction is increased. The amount of increase determines the severity of the case. There is yet no adequate explanation of the cause determining this increased destruction in pernicious anæmia. The suggestion of Mott, that there is an exaggerated "ferrogenic function" of the liver;

of Jones and Brunton, that it is possible that some abnormal product of digestion or even some digestive ferment itself may act as a poison; of William Hunter, that there is produced in the gastro-intestinal tract a poison of cadaveric nature in small quantity and not constantly; of Gowland Hopkins, that the poison is of bacterial origin; and, lastly, of Hunter again, in a more recent article, in which he further develops his theory, concluding from the stomatitis, gastritis, and diarrhoea present, that one has to do with a "chronic infective disease localized to the alimentary tract, caused by a definite infection of certain parts of the mucosa of the alimentary tract chiefly of the stomach and occasionally also of the mouth and intestines"; all are set forth.

Dr. Colman does not include the views of those who hold that pernicious anæmia is merely an advanced stage, which may be reached by any anæmia. He has no doubt of the existence of a *distinct* disease which we call pernicious anæmia. The prognosis in cases of pernicious anæmia is shown in this paper to be fully in accord with that given by Addison fifty years and more ago; resisting all remedial efforts, sooner or later they terminate fatally. It is interesting, however, in this connection to note the subsequent events in the history of 22 reported cases. All these were cured. Arsenic was used in 15 cases, arsenic and salol in 2 cases, bone marrow in 2 cases, iron, phosphorus and betanaphthol in one case each. Ten of these died subsequently; three were lost sight of, doubtless many of them died. Two only were known to be living.

There appears to be nothing new in the matter of treatment. Generally speaking it may be said that milk and farinaceous food suit better. This point finds but little if any emphasis in recent textbooks on medicine. It has been shown that nitrogenous diet increases the normal blood destruction. Transfusion is not recommended. Intestinal antiseptics as salol, salicylic acid, betanaphthol, etc., seem to be much in vogue at present, and some go so far as to attribute to its antiseptic action the good effects following the use of arsenic. Others teach that it stimulates red bone marrow. Iron has sometimes been found advantageous, especially in cases where destruction is not excessive, and even in such cases after the arsenic had initiated the improvement.

#### **Alcohol as a Therapeutic Agent.**

J. MACKIE WHYTE, M.D. "Some Recent Researches on Alcohol: Their bearing on Treatment." *The Edinburgh Medical Journal*, March, 1901.

Dr. Whyte has given a comparatively full résumé of the recent researches on the action of alcohol when taken into the system, and in

the first part of his paper draws justifiable conclusions that the stimulant effect of alcohol on brain, heart or muscle, if existing at all, is very brief, lasting probably only a few minutes. Its apparent effect in stimulating respiration needs further investigation as to its mode of causation. On the tissues, alcohol acts as a protoplasmic poison, as shown by the impaired resistance to infectious attack. This is borne out both clinically and experimentally, and when one considers the varying susceptibility of animals to alcohol one appreciates the warning sounded by Frankel, when he says that one is bound to draw the conclusion that the employment of alcohol in the treatment of infectious diseases in man is not by any means to be lightly resorted to.

Alcohol in the treatment of nervous diseases finds a very small place indeed, if there be any justification of its use in such cases. Its use in alimentary diseases may be confined to cases of simple dyspepsia, when it is given in small quantities before food. In some cases of colic and diarrhoea, it may be used with no known bad effect. In kidney diseases, alcohol should be rigidly withheld.

Among acute infectious diseases, pneumonia was the disease in whose treatment the merits of alcohol were discussed, and several authorities are quoted on this subject. As this disease is so prevalent, and as in the treatment alcohol is so freely used, it may be of interest and profit to recall these opinions. Whatever value alcohol has as a food need hardly be taken into account in the treatment of pneumonia, since patients with this disease usually take plenty of ordinary food, and Schäfe is quoted as saying that "any small production of energy resulting from the oxidation of alcohol is more than counterbalanced by its deleterious influences as a drug." Dr. Whyte, contrasting his experience in two periods of his professional life, states that he feels better satisfied with the results obtained while using little or no alcohol. Aufrecht declares himself a decided opponent of the giving of alcohol in any routine way in pneumonia cases. However, there are decrepit patients to whom he gives pure alcohol, equal to two drachms of whiskey, with orange extract, syrup and water, every two hours. Certain other conditions also call for stimulants in the course of the disease.

Stursberg, from Schultz's clinic, claims that the statistics in Bonn afford no evidence in favour of alcohol. When, however, the patient is found who is habituated to its use, alcohol is given in the course of the disease. Camphor is strongly recommended in doses of from  $1\frac{1}{2}$  to 3 grains or more, as the best analeptic.

Kassowitz's argument is that alcohol is only toxic in its action, that no substance can be a food stuff and poison at the same time, and that camphor is far to be preferred to it as a stimulant. While deprecating the use of alcohol and advocating the use of camphor, he pleads ear-



nestly for sugar as a real food, economizing albumin and fat and stimulating muscle.

Barr, of Liverpool, accords in his view with those already expressed, and suggests that if alcoholic subjects need anything while suffering from pneumonia, four per cent. draught beer or stout is safest.

Before closing this valuable review, Dr. Whyte again refers to the treatment of alcoholic pneumonic patients and quotes once more from Aufrecht upon this subject. In delirium tremens, occurring with pneumonia or without it, he finds extremely favourable results from stopping alcohol entirely, believing, as he does, that it is bad practice to push the stimulant simply because the patient has been a heavy drinker. Beef juice, beef tea, milk, strong tea and coffee, camphor, strychnine, caffeine, ammonium carbonate, and digitalis will meet about all the indication in such cases.

*W. F. Hamilton.*

## Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

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### An Absorbable Murphy Button.

CHLUNISKY. "Ein resorbierbarer Darmknopf aus Magnesium." *Centralblatt für Chirurgie*, No. 15, 1901.

Chlunisky finds that the Murphy button has several faults, which he thinks he has at last overcome. To ensure the disappearance of the button after its usefulness is gone, he has constructed a button of magnesium, which disappears by absorption in from 16 to 20 days. At the end of two days it is found somewhat roughened, in four days slightly shrunken; and in from eight to ten days it becomes very much eroded. The use of this button in dogs is reported to have been successful. Unfortunately, in the one instance in which it was used in the human body, gastro-enterostomy for cancer of the pylorus, the patient died on the fifth day after operation from a double croupous pneumonia.

The author thinks that another weak point in the Murphy button is the spring and movable plate. If the spring is too weak it permits of the escape of infected matter, and of the development of peritonitis or the occurrence of hæmorrhage. If too strong, then too early and wide spread necrosis is the result. For this reason he has omitted altogether in his magnesium button the spring and movable lamella.

### Reinfection of Sterilized Skin from the Cutaneous Sweat Glands.

MOHAUPT. "Beiträge zur Frage nach der Bedeutung der Hautdrüsensekretion auf den Sterilisationseffekt bei der Hautdesinfektion."

We are gradually coming to appreciate the impossibility of keeping hands sterile during an operation, and the reasons why. One reason is that only the surface, the outer epithelial layer, is rendered approximately sterile by any practicable means that have been employed up to the present. Granted that the surface is for the moment rendered sterile, probably the first instrument used or the first ligature drawn through the fingers removes the superficial, epithelial covering more or less, and leaves a surface that is not sterile.

In his investigations, Mohaupt has gone a step further, and has answered the question: How long will skin once sterilized remain sterile under a sterile covering? The time is very short. In 30 minutes the surface is found infected, and Mohaupt thinks the infection is from

the sweat glands rather than from the sebaceous glands. The infection occurred rapidly when the plantar surface of the foot was treated, a surface without sebaceous glands although rich in sweat glands. The result of these experiments would indicate that an operator must while operating disinfect his hands frequently with alcohol or other solutions, or use a protective covering such as impervious gloves.

*G. E. Armstrong.*

### **Surgery of the Spleen.**

J. COLLINS WARREN. "The Surgery of the Spleen." *Annals of Surgery, May, 1901.*

In an interesting paper on the surgery of the spleen Dr. Warren of Boston gives a list of diseases of that organ which have been successfully treated by operation. This list includes many diseases which the profession hitherto generally regarded as amenable only to medicinal treatment, for example, splenic anæmia, splenic leukæmia, amyloid disease of the spleen, etc. After referring to the interesting historical fact, that excision of the spleen was practiced in ancient times to prevent the "stitch in the side" to which athletes and especially runners were subject, the writer of the paper takes up the technique, results and indications for the modern operation of splenectomy. He then gives a detailed account of five cases of surgical treatment of the spleen.

He advises a vertical incision along the outer margin of the left rectus muscle, and sufficiently large to allow easy delivery of the organ, as any rough handling of so friable a structure as the spleen or its vessels may likely cause troublesome hæmorrhage. He also lays stress on passing the hand above the organ and turning it over into the wound, and thus readily exposing the vessels of the pedicle for ligation.

In all cases of excision of the spleen one must expect an increase in the number of white blood corpuscles and a diminution in the number of red cells. In a case of marked splenic leukæmia one cannot help wondering whether this aggravation of the former pernicious conditions, lasting as it does for several weeks after operation, might not cause death. Pyrexia is also another constant result of the operation, together with severe pleuritic-like pains in the left lung.

The paper is a most instructive one, and the past treatment of splenic diseases is not so hopeful that we can afford to pass by lightly any procedure which holds out a reasonable chance of curing the disease by surgical interference. The subject has not received the attention it merits from surgeons as a class, and to Dr. Warren and Dr. Frank Hartley amongst others, we certainly owe a debt of gratitude for drawing attention to it.

**Operative Treatment of Obstructive Jaundice.**

JOHN B. DEAVER, M.D. "The Mortality of Operation for Obstructive Jaundice." *American Medicine*.

Dr. Deaver of Philadelphia, in the introductory number of Gould's new weekly journal, discusses the mortality of operation for obstructive jaundice. The greatest danger is from hæmorrhage, either consecutive or secondary; the other causes of death are exhaustion and cholæmia, and it is doubtful, as the writer points out, whether these should not really be referred to one cause, viz., the toxic effects of a persistent cholæmia preceding operation, and therefore not attributable to operation, but rather to the neglect of it.

Dr. Deaver's statistics agree closely with the results published by Mr. Mayo Robson in his manual on "Diseases of the Gall-Bladder and Bile Ducts" (1900), and both writers agree that peritonitis after operation on the gall-bladder practically does not occur. That death should occur so frequently during and after operations on the gall-bladder, where persistent jaundice has been present, is no contra-indication to operation, but rather it shows that the operation has been too long delayed, and that as the result of a preventible cholæmia the blood has lost its coagulability, and hence the danger. As well might we expect good results in the operation of appendectomy if we waited for general peritonitis in every case before operating. There is no question that in the majority of cases of persistent recurrent jaundice, where the clinical signs point to cholelithiasis as a cause of the trouble, operation is too long delayed; and until we get some internal remedy capable of dissolving gall-stones in the ducts or gall-bladder, these cases should be in the hands of the surgeon. Even in the cases (and they are not rare) where the pain and jaundice are really due to some form of enteroptosis, especially movable right kidney, surgical help is the only hope of cure. But further, we have seen several fatal cases of general peritonitis where the starting point was a cholecystitis due to gall-stones. Had these gall-bladders been opened and drained the deaths might have been averted, for the chances of a patient with peritonitis following a septic gall-bladder are infinitely better, if the peritoneum be opened and drained, than would be in the same case of peritonitis due to infection from a septic appendix. So that, Dr. Deaver, as far as the experience of most hospitals go, is distinctly justified in his claim that the present statistics of mortality after operations for obstructive jaundice are distinctly unfair to the surgeon, simply because the surgeon in many instances has to operate on cases which are practically bile-poisoned before they come into his hands. Opening the gall-bladder and re-



removal of gall-stones as done in the interval between the attacks of colic and jaundice, is one of the simplest, safest, and most efficacious of surgical operations to-day; and even opening and draining a septic gall-bladder with concomitant local or general peritonitis, does not involve the same risk of a fatal termination as would the same operation in other cases of septic peritonitis; but it is a risk which we should rarely have to incur, for these cases could in the great majority of cases be operated upon earlier and the risk avoided.

*J. M. Elder.*

## Reviews and Notices of Books.

MODERN MEDICINE. By JULIUS L. SALINGER, M.D., Demonstrator of Clinical Medicine, Jefferson Medical College, etc.; and FREDERICK J. KALTEYER, M.D., Assistant Demonstrator of Medicine, Jefferson Medical College, etc. W. B. Saunders & Co., Philadelphia and London, 1900. Canadian Agents, J. A. Carveth & Co., Toronto., Price, \$4.00. V

From the title under which this book appears one might expect a treatise on medicine in which one could find most if not all the latest that is accepted and taught touching the pathology, diagnosis, and treatment of internal diseases. One looks, however, in vain throughout the work for anything approaching a satisfaction of such an expectation. One looks to the preface for a justification of its appearance, when one considers the number of admirable text books on medicine, clinical diagnosis, pathology, the excreta, etc., already within the reach of any man who seriously contemplates the task of "equipment" for medical practice. Here, again, one is disappointed, for it is difficult to accord with the authors of this four-fold manual, when they write that since "in the present era the practice of medicine includes the study of a number of specialities, such as physical diagnosis, bacteriology, etc." . . . hence it is necessary for the student to procure separate works upon those topics, and hence "it has appeared advisable for authors to combine in one volume as far as possible the essentials of these branches as applied to clinical medicine." To attempt what has been here attempted in the space of about eight hundred pages, is to fail to present to the student an adequate idea of the matter he should learn. The modern student must work out from the best sources his methods, and from these sources also he must acquire his matter.

Turning to the more particular examination of the contents, one finds methods of examination of the respiratory, circulatory, and abdominal organs set forth, while the nervous system is omitted, no mention whatever being made of the mode of examination of this very important system. Yet it seems that modern medicine has triumphed in matters connected with the pathology and diagnosis of nerve lesions. Modern medicine, we believe, teaches that in typhoid fever a more liberal diet than heretofore is allowed with safety. This work italicises the statement:—"There should be an absolute liquid diet." Modern medicine teaches that tracheal tugging is not pathognomonic of aortic aneurism. In the work before us no mention is made of the

recent observations upon this point. And, moreover, we find in the directions for testing this sign that "the patient should rest the chin upon the chest and he should be told to hold his breath; an upward and downward movement is noted if the sign is present."

We have yet to hear any authentic word against the cotton jacket in pneumonia; all careful physicians deprecate frequent examinations of the chest in that disease. "Poultices and the cotton jacket are of exceedingly doubtful utility and prevent the necessary and systematic examination of the chest" is what Modern Medicine teaches upon this point.

It may be said with general application, that throughout the chapters of this book many important matters are sacrificed to brevity, and time is thus mis-spent and false economy practiced by those who in their medical course would try to "get along" with Modern Medicine as a text book for bacteriology, physical diagnosis, clinical chemistry, and the practice of medicine.

W. F. H.

✓ A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By JAMES M. ANDERS, M.D., Prof. of the Practice of Medicine and Clinical Medicine in the Medico-Chirurgical College, etc., Philadelphia. Fourth edition, thoroughly revised. Philadelphia and London, W. B. Saunders & Co., 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$5.50.

The third edition of this work, issued in 1899, followed the second in less than a year, and but a few months have passed since the edition now under review was published. As compared with the third edition, it does not contain extensive alterations. Sprue, ileo-colitis in children, and acute colecystitis, together with a few other articles, have been written anew. Numerous additions have been made to the section on diseases of the digestive system.

The article on typhoid fever is comprehensive and fully up to date on the points in the diagnosis and treatment of this disease. Malaria is discussed to considerable length, and this article is illustrated very accurately in two plates showing the different forms of the parasites. Upon the "mode of infection" not as much is taught as might now be set forth. Yet at this point Dr. Anders refers to the "extra corporeal cycle of the plasmodium in certain species of the mosquito," and to the work of Bignami and Bastianelli. The medium of inhalation *may* explain some infections.

The views upon the bacteriology of yellow fever are not those recently set forth by a Commission of the United States Government appointed to investigate acute infectious diseases in Cuba, who found in numerous experiments reason to conclude that the bacillus *icteroides*

(Sanarelli) stands in no causative relation to yellow fever. In justice to Dr. Anders, however, it is to be said that this report was published in October, 1900—shortly after the appearance of this text-book.

The recommendation of the use of salicylic acid as an application to the affected joints in acute rheumatism is an advance on most text-books in medicine. In the etiology and treatment of whooping cough much stress is laid upon the theory that the germs of the disease are located on the mucous membranes of the respiratory passages. Taken early, cases of pertussis are treated with peroxide of hydrogen and assafoetida. Next to assafoetida, belladonna is preferred, given internally or in the very young used in a freshly prepared plaster. With bromoform, a keen disappointment has been experienced.

While admitting the unsatisfactory state of the sum of knowledge upon purpura, it is thought that this subject has been passed over too quickly. Under treatment of empyema we think the author makes a mistake when he refers to "resection of a rib" as Estlander's operation.

The chapters dealing with diseases of the circulatory system are especially good, much good advice and many valuable formulæ being given in a few pages. Tracheal tugging seems to have its value as a sign of disease properly ascribed to it in this text-book. In many other works upon aortic aneurism it has been too highly estimated. Under the treatment of aneurism of the aorta, combined wiring and electrolysis and the gelatin injection methods are included.

Part VIII. is devoted to the Nervous System, and opens with an introduction occupying twelve pages, in which important anatomical and physiological points are reviewed. The following sections deal with diseases of the peripheral nerves, of the spinal cord and its meninges, of the brain and its meninges, diseases of unknown pathology, vasomotor and trophic disorders. In this, as in other parts throughout the whole work, Dr. Anders quotes directly or indirectly the highest authorities. He has "gleaned without stint from medical literature," and we are of the opinion that he has succeeded admirably in bringing his text-book well up to date in those matters which pertain to correct diagnosis and rational treatment of disease. The book contains many illustrations and diagrams of pulse tracings, temperature curves, two remarkably good plates of the parasites of malaria and many others relating to the heart, lungs, and nervous system in diseased conditions. The setting forth in tables of points in the differential diagnosis has much to commend it, and it is of undoubted advantage to the medical student.

The modern orthography and terminology have been preferred. The printing and illustrative work is well done. After going pretty thoroughly over its pages, this work is confidently recommended to students and practitioners.

W. F. H.



## **Society Proceedings.**

### **MONTREAL MEDICO-CHIRURGICAL SOCIETY.**

*Stated Meeting, April 12, 1901.*

J. W. STIRLING, FIRST VICE-PRESIDENT, IN THE CHAIR.

#### **Tendon Grafting for Paralysis following Anterior Poliomyelitis.**

DR. A. MACKENZIE FORBES showed a patient upon whom he had performed an operation for a foot-drop from infantile paralysis, and read a report of the case. See page 352 of the May number.

DR. G. E. ARMSTRONG had not had any personal experience of this kind of work, but thought that the result here promised to be favourable. He suggested that it would be of interest to have the case shown a year hence.

DR. W. H. HAMILTON asked whether the nutrition of the muscles was affected so that healing was not so rapid as ordinarily.

DR. FORBES replied that the cases which had come under his notice had healed nicely.

#### **Excision of One-half of the Tongue.**

DR. G. E. ARMSTRONG exhibited a patient from whom he had excised half the tongue for cancer. He stated that the majority of text-books condemned in a wholesale manner all partial operations for cancer of the tongue. Since, however, the publication by Butlin of his work reporting the removal of only half, the speaker had adopted the same method. Butlin's arguments were that recurrence after removal of the whole tongue was either in the cicatrix or in the glands on the same side as the disease and never in the opposite side. Thus one could get as far behind the disease in removing half as in removing the whole. Mr. Treves had raised the objection that the half of the tongue left was useless for speech, mastication, or swallowing, as it became dry, hard and curved like a parrot's tongue. Dr. Armstrong pointed out the incorrectness of this, as the remaining half in his cases, notably in the patient shown, came to lie in the centre of the floor of the mouth, did not tend to curl up and was quite moist and performed its functions well.

The technique of the operation was described, and several departures from the method advised by Mr. Butlin were described in detail. A full report will be published later.

**Multiple Fracture of the Arm.**

DR. ARMSTRONG showed a patient the subject of a double fracture of the radius, double fracture of the ulna, and fracture of the shaft of the humerus. The man had had his fractures reduced by the house surgeon at the Montreal General Hospital when first seen, and the humerus was in very bad position. Under anæsthesia and with the assistance of a number of the resident staff, efforts were made to get the humerus in good position but without success. At last wiring was decided upon with such excellent results that in the last skiagraph taken the line of fracture could not be seen. Skiagraphs had been taken and although they revealed the condition requiring to be dealt with and also the results of treatment, they did not show how to keep the bones in position.

DR. ARMSTRONG also referred to another case in which wiring had been followed by an excellent result, and a third, treated by a surgeon of great reputation, in which fracture of the elbow had been followed by complete ankylosis of the joint necessitating excision for its removal. He felt that if the latter case had been wired in the first instance the ankylosis would likely not have occurred.

**Old Dislocation of the Shoulder.**

DR. ARMSTRONG also showed a man residing in the centre of the city, who had received a dislocation of the shoulder and had not applied for treatment until fifty days after the accident. The dislocation was reduced on the 52nd day. The interest of the case lay in the difficulties connected with a late reduction owing to the danger of fracturing the bone or damaging the vessels. After considerable difficulty reduction was effected and at the time shown, two weeks later, the arm seemed to be in correct position.

DR. WESLEY MILLS thought it of interest to point out that in his student days the late Dr. George Ross, at that time both physician and surgeon, used to remove part of the tongue for cancer. In one case Dr. Mills remembered that the patient had learnt to speak fairly well after excision of one-half of the tongue.

**Hyperplastic Inflammation of Serous Membrane.**

DR. A. G. NICHOLLS showed specimens of this rare condition and gave an account of what is known regarding its production. A full report will be published later.

DR. W. F. HAMILTON thought that rheumatism was perhaps one of the causes leading to the condition described by Dr. Nicholls.

**Notes on a Mild Smallpox Epidemic.**

DR. F. G. FINLEY read a paper with the above title. See page 249 of the April number.

*Stated Meeting, April 26, 1901.*

J. M. ELDER, M.D., SECOND VICE-PRESIDENT, IN THE CHAIR.

**Ununited Fracture of the Humerous.**

DR. A. E. GARROW showed a patient with a fracture of the humerus which had failed to unite after many attempts to secure union. When first seen the arm had been carefully examined under an anæsthetic and a fracture made out at the junction of the middle and lower third. It was oblique in type and running downwards and inwards, the lower end of the upper fragment seeming to come within one and a-half or two inches of the elbow joint. After the swelling had subsided the arm had been put up and allowed to remain so for thirty-seven days, but on removing the splints it was found that no union had occurred. Without disturbing the ends of the bones it was then put in plaster of Paris, but on being taken down there was still no bony union. The ends were vigorously rubbed under an anæsthetic and allowed to remain in plaster until the 77th day, with still no union. On the 107th day, no union existing, an incision had been made in the posterior portion, and on exposing the fragments a moderate amount of organization tissue had been found. The ends of the bone had been freshened and drilled in a number of places, and brought together by chromicised catgut, and the arm had then been placed in plaster of Paris, but again no union had resulted up to the 167th day.

Dr. Garrow held that these cases were apt to occur where the blood supply was broken or interfered with.

**Tumour of the Bladder.**

DR. GARROW also showed a man operated upon for tumour of the bladder. The patient had had no symptoms beyond increased frequency of micturition with occasional hæmaturia until January, 1901. Ten days before admission to the hospital an examination for stone was negative, but after the instrumentation the frequency was lessened. The bladder was emptied 30 to 40 times during the day, about four ounces being passed during the hour. By rectal examination a moderately enlarged lobe of the prostate was made out; the urine was acid. The patient had lost about 40 pounds in weight. Further examination twelve days later by cystoscope showed that a node had appeared in the bladder wall and a distinct mass could be felt not evidently invading the rectum but burrowing its way into the rectal pouch. The case was undoubtedly one of primary carcinoma of the bladder of which the first and most urgent symptom was frequency of micturition.

The speaker had brought the case before the meeting as of interest because of the difficulty met with in making an early diagnosis of

primary carcinoma, and also that the proper method of treatment might be discussed. It was a question whether under the circumstances one would be justified in recommending extirpation of the bladder with transplantation of the ureters into the sigmoid flexure.

DR. ARCHIBALD showed microscopic sections of Dr. Garrow's case.

DR. GORDON CAMPBELL suggested that as the elbow joint was ankylosed and the muscles seemingly in good condition in the case of ununited fracture, an apparatus might be applied to the arm which would give the man a useful limb by making the site of non-union a joint controlled by the muscles.

DR. ELDER had felt, while listening to the report of the case, that possibly a better result might have been obtained by early wiring. In his experience if wiring was delayed too long it was not likely to be satisfactory.

With regard to the bladder case, the speaker thought that with the more common use of the cystoscope an early diagnosis of malignant disease of the bladder was more frequently made than formerly.

DR. GARROW, in reply, said he had not had a skiagraph taken as there was no difficulty in determining the state of the fracture, its location and direction.

### **Some General Principles of Electro-Therapeutics with Case Reports.**

DR. S. F. WILSON read a paper with the above title which will appear later.

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*Stated Meeting, May 10, 1901.*

JAMES PERRIGO, M.D., PRESIDENT, IN THE CHAIR.

### **Pseudo-Myxomatous Peritonitis.**

DR. LAPHORN SMITH reported this case.

### **Carcinoma of the Stomach.**

DR. ARCHIBALD exhibited specimens from a case of carcinoma of the stomach removed by Dr. Garrow a few days previously. The point of interest in the case was that the cancer developed from an ulcer evidently of long standing. The microscopical findings showed a scirrhus of very pronounced type with enormous development of fibrous tissue but very few alveoli and neoplastic cells. The base of the ulcer was formed of dense fibrous tissue containing very few cells.

DR. ARCHIBALD pointed out how common it was to find carcinoma developing on an old ulcer.



## THE OTTAWA MEDICAL SOCIETY.

A meeting was held in Water Street Hospital on April 26th, 1901, Dr. J. L. Cabot, President, in the chair.

DR. HORSEY reported two cases of *Soft Cataract* recently operated on with good results. The first was due to cutting injury in a young man of 24 years, and the other to some constitutional cause, non-diabetic, in a woman of 40 years.

**General Ptosis of the Abdominal Organs.**

DR. A. T. SHILLINGTON read a paper on this subject. In the discussion which followed, the view was generally expressed that some central lesion was concerned in the production of the relaxation of the ligamentous and muscular tissues, possibly some derangement of the sympathetic system.

DR. PREVOST instanced cases where surgical treatment by colporrhaphy and ventrofixation caused improvement only for a time, the same condition developing after six months. General hygiene, massage, tonics, abdominal supports, and regulated exercise ought to be tried before operation was advised.

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The Society met in St. Luke's Hospital on May 19, 1901, for the Discussion of Clinical Cases.

DR. JAMES GRANT, JR., showed three specimens of stones removed at various times by perineal section.

DR. MCCARTHY reported a case of *Intestinal Obstruction* with obstinate vomiting in a woman of 51, lasting three days. The cause was a very large enterolith, the size of a hen's egg, with a gall-stone nucleus. It was finally passed with the assistance of repeated high enemata.

DR. CHABOT reported a case of *Intestinal Obstruction* lasting for ten days in a woman of 74, with most urgent symptoms, including suppression of urine and convulsions. The case finally recovered after large doses of calomel.

DR. J. A. GRANT, JR., showed a patient for whom he had performed *Excision of the Rectum*, by a modified Kraske's operation. The operation had been undertaken for columnar carcinoma, and nine inches of the rectum were removed. The patient was a butcher, aged 40, who had suffered agonizing pain for months. The operation was accompanied by profound shock, but the man was doing well.

DR. KIDD showed hair removed from a *Dermoid Cyst* taken from a woman of 26 years from the abdominal wall just below the umbilicus. He also exhibited 50 *Gall-stones* removed three weeks previously from a

woman aged 40, the subject of recurrent colic without jaundice. A third case was that of the *rectum opening into the vagina*, which he cured by operation.

Other cases of *Gall-stones* were reported, two by DR. COUSENS, in which the calculi were passed in the fæces after systematic external massage of the liver in the region of the duct. Another, complicated by abscess, was reported by DR. MCCARTHY. No stones were found, adhesions were not disturbed. The patient made a good recovery. Symptoms of renal lithiasis were also present in this case.

DR. CHABOT reported the removal of a large *Submucous Fibroid* from a uterus found to be pregnant without interruption of the pregnancy. He also presented for DR. DEWAR a case of successful *radical cure of inguinal hernia* in an infant of six months.

This meeting was the concluding one of the session.

THE

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

EDITED BY

THOS. G. RODDICK,  
A. D. BLACKADER,  
GEO. E. ARMSTRONG,  
WILLIAM GARDNER,  
F. G. FINLEY,

JAMES STEWART,  
J. GEORGE ADAMI,  
G. GORDON CAMPBELL,  
FRANK BULLER,  
H. A. LAFLEUR,

WITH THE COLLABORATION OF

WYATT JOHNSTON.  
C. F. MARTIN,  
J. M. ELDER,  
D. J. EVANS,  
A. E. GARROW.

T. J. W. BURGESS,  
J. W. STIRLING,  
F. A. L. LOCKHART,  
W. F. HAMILTON,  
E. J. SEMPLE,

H. S. BIRKETT,  
KENNETH CAMERON,  
C. W. WILSON.  
A. G. NICHOLLS,  
W. W. CHIPMAN.

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JUNE, 1901.

No. 6.

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## THE ANNUAL CONVOCATION OF THE MEDICAL FACULTY, MCGILL UNIVERSITY.

The Sixty-Ninth Session of the Medical Faculty of McGill University was brought to a close on Friday, June 14, 1901, by the convocation for conferring degrees and awarding prizes. The degree of M.D., C.M., was conferred on 93 candidates, in the absence of the Principal, by Dr. Alexander Johnston, Vice-Principal.

Dr. R. H. Ker, B.A., the Holmes Medallist for the year, delivered the class valedictory, and Professor William Gardner addressed the graduates on behalf of the faculty.

### HONOUR AND PRIZE LIST.

HOLMES GOLD MEDAL, for highest aggregate in all subjects forming the McGill Curriculum—R. H. Kerr, B.A., of Montreal,

FINAL PRIZEMAN, for highest aggregate in the Fourth Year subjects—S. Bruce, B.A., of Moncton, N.B.

CLEMESHA PRIZE, for Clinical Therapeutics—L. F. Robertson, B.A., of Stratford, Ont.

MCGILL MEDICAL SOCIETY SENIOR PRIZES—1. H. M. Little, B.A., of London-Ont. ; 2. C. K. Russell, B.A., of Montreal, Que.

## HONOURS IN AGGREGATE OF ALL SUBJECTS.

- |                           |                          |
|---------------------------|--------------------------|
| 1. Bruce, J., B.A.        | 7. Mackay, M., B.A.      |
| 2. Ker, R. H., B.A.       | 8. Campbell, R. P., B.A. |
| 3. Robertson, L. F., B.A. | 9. Leggett, T. H.        |
| 4. Penner, E., B.A.       | 10. Egan, W. J.          |
| 5. Collison, H., McN.     | 11. Goodall, J. R., B.A. |
| 6. Howard, A. C. P., B.A. | 12. Martin, E. A.        |

THIRD YEAR PRIZEMAN, R. McL. Van Wart, B.A., of Fredericton, N.B.  
 SUTHERLAND MEDALLIST, R. McL. Van Wart, B.A., of Fredericton, N.B.

## HONOURS IN AGGREGATE OF ALL SUBJECTS.

- |                            |                           |
|----------------------------|---------------------------|
| 1. Van Wart, R. McL., B.A. | 6. Gardner, W. A., B.A.   |
| 2. Paterson, R. C., B.A.   | 7. Eastman, E. B.         |
| 3. Campbell, A.            | 8. Manchester, J. W.      |
| 4. Dixon, J. D., B.A.      | 9. Byers, J. R.           |
| 5. Dixon, W. E., B.A.      | 10. McKenzie, J. B., B.A. |

SECOND YEAR PRIZEMAN, E. M. McLaughlin, of Winona, Minn.

SENIOR ANATOMY PRIZE, N. D. Parris, of Barbadoes, W.I.

MCGILL MEDICAL SOCIETY JUNIOR PRIZES, I. J. L. D. Mason, B.A., of Montreal, Que. ; 2. J. C. Colby, B.A., of Stanstead, Que.

## HONOURS IN AGGREGATE OF ALL SUBJECTS.

- |                       |                          |
|-----------------------|--------------------------|
| 1. McLaughlin, E. M.  | 6. Cowperthwaite, H. H.  |
| 2. Nelson, W. E.      | 7. McKenzie, J. B., B.A. |
| 3. Burns, A. S., B.A. | 8. English, J. M.        |
| 4. Elder, R., B.A.    | 9. McCulloch, J. M.      |
| Parris, N. D.         | 10. Turner, G. H., B.A.  |

FIRST YEAR PRIZEMAN, J. A. Nutter, B.A., of Montreal.

JUNIOR ANATOMY PRIZE, J. L. Robinson, of St. Mary's, Ont.

## HONOURS IN AGGREGATE OF ALL SUBJECTS.

- |                        |                           |
|------------------------|---------------------------|
| 1. Nutter, J. A., B.A. | 10. McLachlan, D. C.      |
| 2. McIntosh, L. deC.   | 11. Martin, J. C.         |
| 3. Robinson, J. L.     | 12. Miller, V. L., B.A.   |
| 4. Sellery, A. C.      | 13. Harrison, L. L., B.A. |
| 5. Fyshe, J. C., A.B.  | Reford, L. L.             |
| 6. Dillon, W. P.       | 15. Gillis, J. E.         |
| 7. Wood, W. H.         | 16. Charman, F. D.        |
| 8. Chipman, W. W.      |                           |
| Lippiatt, H. T.        |                           |

The following received the Degree of M.D., C.M. :

|                        |                       |
|------------------------|-----------------------|
| Bayfield, T. F.        | Charlottetown, P.E.I. |
| Belanger, E. R.        | Ottawa, Ont.          |
| Blake, J. J.           | Charlottetown, P.E.I. |
| Browne, J. G., B.A.    | Montreal, Que.        |
| Bruce, J., B.A.        | Moncton, N.B.         |
| Butler, P. E.          | Milltown, N.B.        |
| Campbell, R. P., B.A.  | Westmount, Que.       |
| Carlyle, D. A.         | Morewood, Ont.        |
| Cartwright, C.         | Kingston, Ont.        |
| Coates, H. W.          | Bass River, N.B.      |
| Collison, H. McN.      | Dixon's Corners, Ont. |
| Collison, J.           | Dixon's Corners, Ont. |
| Crang, F. W.           | Toronto, Ont.         |
| Dalton, C. H.          | Tignish, P.E.I.       |
| Donaldson, A. S.       | Brockville, Ont.      |
| Duncan, J. W.          | Montreal, Que.        |
| Eagan, W. J.           | Sydney Mines, N.S.    |
| Ellis, R. L.           | Youghall, N.B.        |
| Fleming, J. E.         | North Rustico, P.E.I. |
| Fuller, A. T., B.A.    | Truro, N.S.           |
| Gardner, R. L., B.A.   | Brockville, Ont.      |
| George, J. D.          | Redwood, N.Y., U.S.A. |
| Goodall, J. R., B.A.   | Ottawa, Ont.          |
| Harley, R. J. O.       | Cheshire, Eng.        |
| Hope, J. T.            | Glen Robertson, Ont.  |
| Howard, A. C. P., B.A. | Montreal, Que.        |



|                              |                            |
|------------------------------|----------------------------|
| Hunter, E. N. McL. ....      | Merrimac, Mass., U.S.A.    |
| Jackson, G. F. ....          | Brockville, Ont.           |
| Johnston, R. DeL., B.A. .... | Montreal, Que.             |
| Johnston, A. ....            | Leeds, Que.                |
| Johnston, J. L. ....         | Martintown, Ont.           |
| Jones, J. H. ....            | Brockville, Ont.           |
| Jones, Sydney, B.A. ....     | Cleveland, Ohio, U.S.A.    |
| Kendall, A. L. ....          | Vancouver, B.C.            |
| Ker, R. H., B.A. ....        | Montreal, Que.             |
| Lawlor, F. E. ....           | Dartmouth, N.S.            |
| Learmonth, G. E., B.A. ....  | Westmount, Que.            |
| Leggett, T. H. ....          | Ottawa, Ont.               |
| Little, H. M., B.A. ....     | London, Ont.               |
| Lunney, T. H. ....           | St. John, N.B.             |
| Mackay, D. S. ....           | Reserve Mines, N.S.        |
| Mackay, M., B.A. ....        | Montreal, Que.             |
| Mackenzie, S. D. ....        | Sarnia, Ont.               |
| Macneil, J. W. L. ....       | Kensington, P.E.I.         |
| Macpherson, C. ....          | St. John's, Nfld.          |
| McDonald, C. A. ....         | Milltown, N.B.             |
| McDonald, E. E. ....         | Fort Qu'Appelle, N.W.T.    |
| Martin, E. A. ....           | Kemptville, Ont.           |
| Meighen, W. A. ....          | Perth, Ont.                |
| Millar, S. ....              | South Dunham, Que.         |
| Miller, G. H. S. ....        | Alexandria, Ont.           |
| Moore, J. C., D.V.S. ....    | St. Chrysostome, Que.      |
| Morgan, A. D. ....           | Nanaimo, B.C.              |
| Mullaly, E. J. ....          | Souris, P.E.I.             |
| Newcombe, W. E. ....         | Vancouver, B.C.            |
| Niven, J. K. ....            | London, Ont.               |
| O'Sullivan, M. T. ....       | Glace Bay, C.B.            |
| Patterson, A., B.A. ....     | Montreal, Que.             |
| Penner, E., B.A. ....        | Gretna, Man.               |
| Pittis, H. ....              | Plainfield, N.J., U.S.A.   |
| Redon, L. H., B.A. ....      | Victoria, B.C.             |
| Richards, B. A. ....         | Yarmouth, N.S.             |
| Roberts, J. ....             | Hamilton, Ont.             |
| Robertson, C. G. ....        | Hawkesbury, Ont.           |
| Robertson, L. F., B.A. ....  | Stratford, Ont.            |
| Robertson, R. D. ....        | St. John, N.B.             |
| Robidoux, L. E., B.A. ....   | Shediac, N.B.              |
| Rogers, H. B. ....           | Peterboro, Ont.            |
| Russel, C. K., B.A. ....     | Montreal, Que.             |
| Russell, E. M. ....          | Springfield, Mass., U.S.A. |
| Rutherford, C. A. ....       | Waddington, N.Y., U.S.A.   |
| Ryan, W. T., B.A. ....       | Fredericton, N.B.          |
| Sanders, C. W. ....          | Kemptville, Ont.           |
| Shearer, C. ....             | Montreal, Que.             |
| Shearer, R. L. ....          | Kelso, Que.                |
| Simpson, A. S. ....          | Bay View, P.E.I.           |
| Simpson, E. G. W., B.A. .... | Lennoxville, Que.          |
| Snyder, A. E. W. ....        | Coaticooke, Que.           |
| Stentafor, G. L. ....        | Heart's Content, Nfld.     |
| Stevenson, J., B.A. ....     | Montreal, Que.             |
| Stewart, C. L. ....          | Russell, Ont.              |
| Stewart, C. A. ....          | Dunvegan, Ont.             |
| Taylor, D. A. ....           | Havelock, N.B.             |
| Taylor, W. L. ....           | Waterloo, Que.             |
| Ward, J. A. ....             | Lewiston, Maine, U.S.A.    |
| White, E. H., B.A. ....      | Montreal, Que.             |
| Wiggin, W. L. ....           | Lowell, Mass., U.S.A.      |
| Wiley, B. E. ....            | Fredericton, N.B.          |
| Williams, W. ....            | Remsen, N.Y., U.S.A.       |
| Wilmot, L. B. B. ....        | Oromocto, N.B.             |
| Wilson, J. J. ....           | Montreal, Que.             |
| Winter, D. E. ....           | Montreal, Que.             |
| Wyman, H. B., B.A. ....      | Chute a Blondeau, Ont.     |

Dr. Craik, Dean of the Medical Faculty, delivered a short address reviewing the life history of the Faculty from the time of its inception. Part of this address was as follows:—

"When the faculty first came into existence in 1829, it had in attendance at its first session 30 students. When it was twenty-one years old, in 1850-51, the number of students was only 53. When it was sixty years old, in 1888-89, the number had increased to 227; and now, twelve years later, when it has completed its seventy-second year, the number has reached 490, or within ten units of half a hundred. Of the 490 in attendance during the present session, 467 have been undergraduates, proceeding to the degree, while the remaining 23 were graduates and partial students pursuing special courses of study.

"The area from which the students have been drawn, has also increased, more particularly of late years, almost in proportion to their numbers. For many years the provinces of Ontario and Quebec, or Upper and Lower Canada, as they were formerly called, furnished all but a very small minority of our students, and these provinces together still furnish a majority of the whole; but the homes of the others are every year becoming more and more widely distributed over an area covering the whole Dominion, and stretching out over the whole of this continent; through the United States, Newfoundland and the West Indies, as well as across the Atlantic to Great Britain and Ireland, and this session even across the Pacific Ocean, to China and Japan. The number from different provinces and countries is as follows: Ontario, 156, or nearly 32 per cent.; Quebec, 142, or almost 29 per cent.; New Brunswick, 52, or  $10\frac{1}{2}$  per cent.; the United States, 47, or  $9\frac{1}{2}$  per cent.; Nova Scotia, 29, or nearly 6 per cent.; Prince Edward Island, 27, or  $5\frac{1}{2}$  per cent.; British Columbia, 13, or  $2\frac{1}{2}$  per cent.; Newfoundland, 9, or nearly 2 per cent.; Manitoba, and the North-West Territories, 4; the West Indies, 4; Great Britain and Ireland, 4; China, 2; Japan, 1; all of the last five, less than 1 per cent.

"The obvious lesson to be drawn from the foregoing list is, that, though situated in the French province of Quebec, our school attracts English-speaking students in increasing numbers from all the other provinces of the Dominion, as well as from other outlying British provinces, such as Newfoundland and the West Indies, and even from the British Islands themselves. More gratifying still is the considerable number—nearly ten per cent.—from the United States, where we have to compete with their great schools; and still more remarkable, the appreciable number from distant China and Japan. Indeed, it seems not too much to claim that the medical faculty of McGill University is being recognized as one of the representative medical schools of Anglo-Saxondom.

"When we adopted in 1894, seven years ago, the nine months' session in our four years' course, making thirty-six calendar months in all, we

were in advance in actual teaching time, of nearly every school in existence, and for a time it certainly relieved the tension of our sessional teaching; but the ever-increasing amount of matter to be taught has more than kept pace with the increase of time for teaching it, and here and elsewhere the idea of an additional year has been coming unmistakably to the front. The Medical Council of Great Britain has recommended it. So has the Medical Council of Ontario; and if Dr. Roddick's bill for Dominion registration and reciprocity throughout the British Empire becomes law, as we hope and believe it will next session; a five years course will be a necessary condition of such enregistration.

. . . . .

"The present four years' course bears hardest upon the honest, hardworking students, with fair ability, but whose mental processes move slowly, and who find it difficult to take in, and to digest new facts and ideas; but once digested and assimilated, the knowledge becomes part of their mental organization and can scarcely be forgotten. Many such students are constantly, perforce, compelled to take an additional year under most unwelcome circumstances. To them the option of an additional year, without humiliation, would be a boon indeed. And why should not such a boon be accorded to them, if it could be done without injustice to others? With his work and his examinations properly graded, even the dullest student, if he be mentally sound, should be able to master every subject, even in the broadest curriculum. Nor should such an arrangement be unjust to the brilliant student. All important changes in a college course should, wherever possible, at least at first, be more or less optional. The brilliant student might, as before, be allowed to finish his work and his examinations in the four years; the additional year being spent in foreign travel, special studies, or in such other way as might be considered least onerous and most beneficial. Such arrangements are matters of detail, sometimes difficult indeed, but always capable of adjustment by patient and persistent effort.

"It is not our custom to adopt hastily or without careful consideration new ideas or theories, however plausible they may be; nor unfinished experiments, however conclusive they may at the time appear. We have ever preferred the guidance of the safe old rule, coming to us with such high authority, to prove all things, and to hold fast to that which is good. We have no intention of adopting the five years' course until such time as the public, and particularly all those interested in advanced medical education, shall have had time to weigh carefully

the arguments for and against the proposed extension, and with our present very extended course of our full sessions of nine months each, we can certainly afford to take another year to look at the matter from every point of view before making up our minds as to the proper course to follow.

“The extensive additions to our medical buildings which have been in progress during the last year, have resulted in the completion of a beautiful and commodious new wing on the western side of the present central building, and a large addition to the northern wing on its eastern side. The workmen are now busy with the remaining wing on the eastern side, to be symmetrical with that on the west; and when completed, early in September, the whole will form a block of medical buildings, which, for stately beauty, capaciousness and completeness of internal arrangements cannot be excelled by any medical buildings on this continent.

“I need not remind you that we owe these beautiful and extensive additions to our buildings to the munificent generosity of two members of Lord Strathcona's family—Lady Strathcona and the Honourable Mrs. Howard, who gave jointly one hundred thousand dollars to defray the cost of their erection.

“It was my sad duty last year to allude to the death in South Africa of Mr. O'Reilly, of Hamilton, Ontario, one of our students, who had gone to fight for his Queen and Empire in that distant land. We have had since then to lament the death in the same country of one who should have been in our graduating class to-day, Mr. Harold L. Borden, son of Hon. Frederick William Borden, of Nova Scotia, minister of militia and defence. He was slain on the battlefield while leading his men in deadly conflict with the enemy; and while we mourn his loss, we cannot but admire the courage and the devotion which caused him to sacrifice his brilliant prospects and to lay down his life at the call of his country. Courage and steadfastness were the qualities which chiefly distinguished him; and these have been the qualities inherent in Britons everywhere, which have made the Empire what it is, and which will keep the Empire great and powerful, both in peace and in war, while those qualities still remain.

“The session which is now closing has not differed materially from those which have gone before it. There has been the same steady progress in all directions, the same diligence and faithfulness on the part of the students, and the same high average in the results of the examinations. Our graduates of to-day are before you, and will bear comparison with any that have gone before them. We have no fears for them. We are proud of them—proud of them as graduates, proud



of them as gentlemen, and we send them forth to their life's work, well knowing that they will acquit themselves like honourable men, and that the interests and the good name of their alma mater will always be safe in their keeping."

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#### CANADIAN MEDICAL ASSOCIATION.

We are pleased to be able to say that arrangements for the Winnipeg meeting (August 28th to 31st next) are progressing favourably. From what we can learn the gathering promises to be large and representative. Dr. O. M. Jones, F.R.C.S. (Eng.), of Vancouver, will deliver the Address in Surgery, and Dr. J. R. Jones, Winnipeg, the Address in Medicine. Several interesting discussions are arranged for, and the social side is being looked after as only a Western City can do it. There is to be an outing to Fort Garry, and on Saturday, the 31st August, an excursion to Brandon given by the profession of the Prairie City.

The railways have promised a single fare return rate on the certificate plan, good going August 20th to August 28th, and good to return leaving not later than September 15th. If the all-rail going trip is taken and one desires to return by the Lake route, a ticket will be issued on payment of \$4.25—just enough to include meals and berth. If one desires to return by rail the ticket is issued *free*. This makes it possible for everyone to attend and a large number should, for we all have friends who are expecting us to visit Manitoba, the North-West or British Columbia, to all parts of which return tickets will be issued *after* the meeting for single fare from Winnipeg upon presentation of the certificate of attendance.

The General Secretary, Dr. F. N. G. Starr, Biological Building, Toronto, will be glad to furnish information to persons intending to take advantage of this unusually cheap trip to the West.

The following are some of the papers that will be read:—

On Surgery, O. M. Jones, F.R.C.S., Victoria, B.C.

On Gynæcology, Dr. T. S. Cullen, Baltimore, Maryland.

On Medicine, Dr. J. R. Jones, Winnipeg, Man.

On Tuberculosis and Milk, Professor Russell, University of Wisconsin.

The Sanitarium Treatment of Tuberculosis, Dr. Richer, Montreal.

Tubercle in Summer Diarrhœa of Children, Dr. Blackader, Montreal.

The Present Small-Pox Epidemic, Dr. H. M. Bracken, St. Paul, Minn.

Hæmatology, Dr. L. H. Warner, New York.

Skin Diseases, with Lime-Light Illustrations, Dr. F. J. Shepherd, Montreal.

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Robert U. Patterson, M.D., McGill, '98, who spent a year as House-Surgeon at the Montreal General Hospital and held a similar position in the Montreal Maternity for six months, has recently passed the Entrance Examination for the U.S. Army Medical Corps, held at Washington. Of the 135 men who presented themselves, only 19 passed, and we are pleased to note that Dr. Patterson heads the list of the successful candidates. During the year which has elapsed since leaving the hospital, Dr. Patterson has been acting as assistant to Dr. Vidal, at Belt, Montana, and while there suffered from a severe attack of typhoid fever.

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Dr. Charles A. Peters, M.D., McGill, '98, after filling the position of House-Surgeon at the Montreal General Hospital for a year, proceeded to England, where he obtained the degrees of M.R.C.S. Eng., and L.R.C.P. Lond. in January, 1900. In February of the same year he volunteered for service in South Africa as a civil surgeon attached to the R.A.M.C.

While in Africa most of his term of service was spent at No. 5 General Hospital, Woodstock, a few miles from Cape Town. For three months he was assistant on No. 4 Hospital Train, making three trips of one month each up country. These trips carried him into all four colonies and gave him an opportunity of seeing the places where most of the important battles of the war took place.

In April, 1901, Dr. Peters was sent to England in charge of invalided troops on the transport Canada and there resigned his position in the service. He intends to practice in Montreal.

## Proceedings of the McGill Medical Society of Undergraduates.

### NEURASTHENIA.

BY

G. EVERETT LEARMONTH, B.A.

In dealing with such an extensive subject as neurasthenia it will be my best endeavour to give you as concise and as general a knowledge of this disease as is consistent with the time allowed me. Treating mainly the salient points:—

It has been said that neurasthenia is more a modern than an ancient disease, but, as Clifford Allbutt remarks, “we cannot suppose that the symptom group to which the name “Neurasthenia” is given is in any exclusive sense the product of our own times. As insanity and epilepsy, so neurasthenia had no doubt its sphere in all ages, but unlike the sufferers from the former two diseases, which had somewhat of a sacred character and thus enjoyed a certain protection, neurasthenic persons would be harshly dealt with and thrust aside and escape even medical recognition. Even in our own highly enlightened times the neurasthenic does not receive the attention which he, in every way, deserves.”

Physicians, and young physicians especially, are apt to regard this condition more or less lightly, and so over and over again we come across a neurasthenic whose condition has resolved itself into a chronic one of a severe type, and this due in the greatest measure to the fact that he has been improperly looked after and treated by his medical adviser. The recognition of Neurasthenia as a distinct and important disease, is the requisite which you ought always to have in mind, and that it is one which requires the highest scientific medical knowledge, the greatest tact, the keen sympathy and the strong personality of the physician to cope with.

Do not think that neurasthenia represents a motley group of symptoms which arise mainly in the imagination of the patient, if that be the case it were better that you never had a neurasthenic to advise in regard to treatment.

Clifford Allbutt says “The varieties of the disease and the wheels within its wheels are so many, and in apparent diversity so bewildering, that the essential unity of the process long lay hidden and its features long eluded classification and analysis. Neurasthenia signifies a wide generalization drawn from a world of particulars,—particulars which are apt to gather in sub-groups forming fairly consistent and uniform

maladies subordinate to the main disease; and the nature of these several lesser constellations of symptoms is revealed only by a subtle analysis and a training in exact clinical observations." Although all these symptoms require the keen observations of the physician to differentiate, yet, be ever mindful that when early and scientific treatment is resorted to there will be a tendency towards their elimination and consequent disappearance.

THE TERM NEURASTHENIA.—But now passing on from the general to the particular. The term "Neurasthenia" has been frequently attributed to the fertile brain of Beard of New York. This, however, is not the case, for in the first edition of Dunglison's Medical Dictionary, published in 1833, we find it used, and even further back we find its use in some of the German text-books.

It can be truthfully said, though, that Beard did much to popularize the term, and he was the first to give an accurate description of neurasthenia as a symptom group. Beard's first work appeared in the *Boston Medical and Surgical Journal* in 1869.

DEFINITIONS:—Definitions of the disease are many, but perhaps the best that I have yet met with in any of the literature on the subject is that given by William Osler<sup>2</sup>. He defines it as a "condition of weakness or exhaustion of the nervous system, giving rise to various forms of mental and bodily inefficiency." Perhaps it would have been better had he made especial note of the "mental inefficiency," for in neurasthenia it is the mental rather than the "bodily" inefficiency that is of great import, though in many cases the mental is consequent upon or secondary to the bodily condition.

ETIOLOGY:—What is the etiology of this affection?

There can be no doubt as to the causation, for all authors agree that it may be due to causes of hereditary or of an acquired nature. We are all aware that of transmissible hereditary tendencies, that of a defective nervous organization is most frequently transmitted.

*Heredity*:—When due to hereditary influences it generally evidences itself between the years of fifteen and twenty, that is, during the period of greatest bodily and mental change. Some authors state that the greater number of cases met with come under this heading of heredity.

The main predisposing factors when due to heredity are parental neurosis, psychosis, and excesses of all kinds particularly in the sexual relations, lowering the resistance of the organism as a living entity, and here the pathogenic factors have a fruitful field which otherwise would have been sterile.

Gout, rheumatism, syphilis, and tuberculosis may act as predisposing factors in the offspring<sup>3</sup>.



And so it is that parents who have led irrational lives and who have brought their vital forces to a low ebb, may transmit to their children a defective nervous organization—defective in nerve force. So much for the hereditary influences.

Perhaps in persons originally endowed with ample nervous volume, a dislocation of the nervous and sluggishness of the auxillary, processes of these systems, or some such retrogressive state of nutrition as Hodge and others have demonstrated in the nerve cells of overworked wasps, may be equivalent to an original defect of capacity. Of nervous matter, instability is the peculiar virtue, not irritability; the fault in neurasthenia is that the vibrations of the sense organs, instead of being absorbed into the larger harmonies of the nervous system, take to short circuiting, whereby their energy is wastefully dissipated.

*Acquired.*—Now coming to the acquired forms of causation, what I set down as one of the chief factors here is strain; be it in what direction it may, strain acts as a potent factor in the production of neurasthenia. By strain I mean either bodily or mental strain—exercise in excess of the normal output, it may be either in the form of mental worryment or overexercise of the body in athletics.

Neurasthenia may follow the infectious diseases, especially influenza and syphilis, and in some instances typhoid fever. Such disorders as alcoholism, morphinism, cocaine mania, and the like act as primarily active factors of the typical form.

Religious doubts and excessive worship at the shrine of Venus are causes; also prostatitis, gonorrhœa and masturbation. In women, excessive fecundity, dysmenorrhœa and the menopause are brought to exercise a marked exciting influence. The modern French writers lay great stress upon the role played by the neuroarthritic diathesis in its causation.

To these is to be added traumatic neurasthenia or that form consequent upon trauma or injury, generally associated with severe railway accidents and the like.

I have said that syphilis is a cause but it is often incriminated when it is possible that the injudicious use of mercury<sup>5</sup> is more to be blamed. The acquired form is of occurrence usually between the ages of thirty and fifty, yet "senile" neurasthenia is common in persons of advanced age.

Collins and Phillips, in a careful study of 333 cases of neurasthenia, have given the various causes of the disease in these cases. They are set down as follows:—first of all giving the relative frequency in male and female.

*Sex:*—Males, 183, (55 per cent.); married, 36 (23 per cent.); single, 87 (26 per cent.); females, 150 (45 per cent.); married, 103 (31 per

cent.); single, 48 (14 per cent). Showing that the disease is more frequent in men than in women; here the preponderance of males over females is very marked:

*Age*:—Oldest, 67; youngest, 6; average, 33.3, most frequent decade, third.

Frequency according to decades:—10 to 20 years, 6.6 per cent.; 20 to 30 years, 33.6 per cent.; 30 to 40 years, 27 per cent.; 40 to 50 years, 16.2 per cent.; 50 to 60 years, 8.4 per cent.; 60 to 70 years, 2.1 per cent.; showing that the extremes of life are practically exempt.

*Occupation*:—Housewives 34, (28 per cent.). Tailors, 37 (11 per cent.). Clerks, 26 (8 per cent.). Indoor occupations, 264 (79 per cent.). Nearly one-half of all the patients gave their nationality as American.

*Attributed causes*:—Overwork, 27; masturbation, 26; worry, 18; fright, 10; childbirth, 12; sorrow, 11; traumatism, 8; previous disease, 7; alcohol, 4.

The effect of overwork and masturbation (the authors include for convenience sake, so they state, other irregular forms of neurasthenia) are here shown as being the strongest factors. These statistics are most valuable and they but confirm our knowledge of the causative agents at work in the production of neurasthenia.

*Charcot's Classic Symptomatology*:—Before entering into a discussion of the symptoms which come under various headings, I think that it will be of some service if I give some of the general symptoms of the disease and these have been well-designated by Charcot as neurasthenic stigmata and are fundamental and typical symptoms. Such are the pain and pressure in the head, disturbances of sleep, spinal pain and spinal hyperæsthesia, the muscular weakness, the nervous dyspepsia, the disturbances of the genital organs and the typical mental phenomena, irritable humour, psychic depression, feelings of anxiety, intellectual fatigue, incapacity of decision, and the like. In addition to these cardinal symptoms of the disease, Charcot described as secondary or accessory symptoms the feelings of dizziness and vertigo, the neurasthenic asthenopia, the circulatory, respiratory, secretory and nutritive disturbances, disturbance of motility and sensation, the fever of neurasthenia and neurasthenic idiosyncrasies. The anxiety conditions and the various phobias as well as the different varieties of tic, and the occupation neuroses when they accompany neurasthenia, are regarded as complications dependent in the majority of cases upon faulty heredity.

*Complex Symptomatology*:—Above all we know that the chief characteristic of neurasthenia is its complex symptomatology. Various classifications have been made to designate the predominating symptoms of

the disease, but the one now generally adopted is the one after the plan of Beard's. So we have:—

A. The cerebral type where the mental symptoms predominate.

B. The spinal, where the spinal symptoms overrule.

C. The cardiac, where the heart symptoms and circulatory symptoms are most in evidence.

D. The gastro-intestinal, where the gastric and enteric symptoms are the most prominent.

E. The sexual type where we have a host of symptoms originating in the genitals most in evidence.

Although neurasthenia is thus grouped you will seldom, if ever, find symptoms present which taken together, can all be put under one single heading. As a rule two or more of these groups are associated with one another; thus we may find the cerebral and the spinal types hand in hand, or the cerebral, gastric and cardiac types in conjunction, or again the sexual, gastro-intestinal, cardiac and cerebral symptoms in the same individual.

We expect to find one of these groups most in evidence and altogether predominant with the symptoms of one or more of the other groups associated with it.

I will now take up separately each of these groups and give the main symptoms found. Here space and time do not allow me to thoroughly discuss the symptoms in particular, I will therefore confine myself to the more general, though in certain cases where I deem it necessary, I will dwell somewhat at length on the particular.

*The Cerebral type:*—The most prominent and altogether characteristic symptom here found is mental fatigue, and it may vary from a slight though troublesome brain weariness to the very severe form where there is total inability to perform ordinary mental work. These patients are generally irritable and depressed and brood more or less over their trouble. This sensation of brain fatigue is familiar to many men, especially if they be short of sleep. Insomnia is generally present, and as a rule is very intractable. The patient will sleep for a few hours, then waken up at an early hour and be unable to go to sleep again. Headache is usual, but not very characteristic, it is diffuse and the patient will tell you that he feels as though he had a heavy helmet on his head or constricting band, the so-called "casque neurasthenique." Loss of memory is present in most cases and complained of, though when closely questioned it will be found as a rule that the memory is fairly accurate.

Introspection or the looking inwards, and dwelling upon the condition morbidly is characteristic, altogether the patient is self-centred.



The various obsessions or anxieties are typical of cerebral neurasthenia, especially claustrophobia and agorophobia: Many other phobias may be present.

Claustrophobia is the fear of being shut up in a church, theatre, etc. This gives rise frequently to visceral sensations, and associated with it may be oppression of the chest, panting or heart constraint or a disposition to diarrhœa, known as "church diarrhœa."

Agorophobia, or the fear of an open space. This is a most peculiar condition and evidences itself when the patient comes into an open space. He begins to have weakness at the knees and he trembles all over and in fact seems to be almost panic stricken.

Clifford Albutt cites several of these cases but he is at a loss to account for the causation. He thinks that perhaps the origin is in some disorder of adaptation of the ocular muscles.

Many other phobias or "fears" are cited by various authors, but I will not detail them here.

Vertigo is a common symptom of neurasthenia.

Hyperacusis, an overacute sense of hearing is also a common symptom. Alterations in taste and smell are frequently present.

Photophobia or a dread and dislike of light is sometimes present.

Certain eye symptoms are important and should certainly be made note of. An aching or weariness of the eye balls especially after reading and *muscæ volitantes* or floating spots are present.

The condition known as neurasthenic asthenopia is very frequently present. These are the more prominent symptoms of the cerebral type and now I pass on to the spinal type.

*The Spinal Type:*—The chief feature of this form are weariness of the legs and pains in the back, these patients are always weak and good for nothing in body. The pains in the back are dull, diffused aches, or an acute pain with tenderness, especially in certain spots in the upper dorsal spines, between the shoulders, or again across the pelvis; here the tenderness being in the lower lumbar spines or in the sacro-iliac synchondroses. This latter site is especially frequent in traumatic cases.

There are various perverted sensations of which these patients complain:—of tingling in the legs, formication or creeping sensations and, remarkably, of coldness, even of icy coldness, as if he had been standing in cold water. The limbs go to sleep easily. Even the tongue is not infrequently the seat of numb sensations and so sometimes fears of cancer arise. The gait may be, and often is, very slow and feeble and creeping, but is never ataxic or paralytic, except in the hemiplegic form or associated with hysteria. The reflexes in neurasthenia are never absent but are generally prone to excess.



In some cases muscular weakness is extreme and may proceed to complete motor helplessness.

*The Cardiac Type.*—We find that where this form is in evidence the heart's action is ordinarily rapid and easily quickened and very rarely is it slower than normal. Above all, the patient is too conscious of its action and this may give rise to the so-called cardiac anxiety condition. The pulse of the chest and neck may be visible. In some cases it has been noted that the arteries are relaxed and constricted in turn. A late case of mine in the Royal Victoria Hospital was that of a man, æt. 36, who, although in the surgical ward, was being treated for a rectal symptom, which I believe firmly, was entirely of a neurasthenic nature. He evidenced rather marked cardiac symptoms and complained of an inability to sleep well at night, owing to the fact that, as soon as he placed his head on the pillow, the heart beat was distinctly felt and caused him great distress. No rectal lesion could be discovered. No signs whatever of organic disease were present.

Irregularity, or intermittence of the pulse is also far from uncommon, though any contingent cause, such as tea or tobacco, should be considered.

Pseudo-angina pectoris is apt to occur in nervous exhaustion and may occur in young patients—neurotic subjects. Such patients recover, but after a hard time of pain and bondage.

Neurasthenia in its uncomplicated forms, presents no cardiac murmurs, hæmic, or other, but a marked tenderness on pressure at the apex, is common and characteristic.

*The Gastro-intestinal Type.*—Here we find that symptoms of pain, sinkings and acidities of the stomach are common. Digestion as a rule is usually slow, occupying as much as seven hours for the process. In other cases it is alleged that the food leaves the stomach too quickly. The gastric juice, may be normal perhaps usually, the common defect being in the motor function; or again, there may be a deficiency or an excess of hydrochloric acid. Constipation is most frequent in this variety although diarrhœa may sometimes be present. The latter may co-exist with the former, and is the so called "Church Diarrhœa" which I have made mention of already.

The curious connection of membranous colitis with neurasthenia so far has not been explained. It does seem as though there was some peculiar relation between them.

The connection of neurasthenia with spasm of the colon is a curious phenomenon, and the persistence of the general disease seems to hang upon our success with the bowel disorder.

In certain cases, generally of the metabolic variety of neurasthenia,

we may find a sausage-shaped tumour in the right iliac fossa, or perhaps in the sigmoid or splenic flexure of the colon, and of a pulpy consistence. Perhaps the physician will visit his patient again and again being sure that there is something there. Perhaps an abdominal section will be made and with negative results in respect of static mischief but happily with the effect of the complete and inexplicable cure. This may be compared to the disappearance of severe symptoms following a nephrotomy for aching kidney.

In some gastro-intestinal cases there may be extreme emaciation and refusal of food, and these cases approach the type of anorexia nervosa.

The theory of auto-intoxication comes in here in the discussion of the gastro-intestinal type. Briefly, this theory is as follows:—That there is some peculiar connection between the absorption of the products of fermentation from the bowel and neurasthenia. That an auto-intoxication does take place has not been fully proven, and research work in this direction will be looked to with interest. Clifford Allbut thinks that perverted catabolism (retrograde tissue change) may be at the root of it.

Glénard's disease or enteroptosis, is sometimes present in these gastro-intestinal cases. It is not actually a disease but a symptom group characterized by looseness of the mesenteric attachments so that the stomach, the intestines, particularly the transverse colon, the liver, kidneys, and the spleen occupy an abnormally low position in the abdominal cavity.

*The sexual type:*—It may be said that these cases are as full of vexation to the physician as they are to the patient, and indeed they are the most incurable of all. The symptoms which the patient complains of are many, and the sense of delicacy in most cases is a minus quantity. Most authors advise the examination of the patient's urine, not so much for albumin or for sugar as for less radical changes. Phosphaturia, oxaluria, or azoturia (increase of urea in the urine) may explain much.

The sexual neurasthenic is one of the most miserable of beings, for his sufferings are constant and with him always.

There is present in most of these cases a condition of irritability and weakness of the sexual organs. He will usually complain of having losses at night, followed usually by great depression and fatigue and a host of other symptoms. There are few more pitiable conditions into which a man may fall than that of sexual neurasthenia, and to raise him from this condition the physician requires to be almost especially endowed.

Time and good living and high ideals are potent factors in the cure of this disorder. Impotence in most cases is the rule, yet sometimes sexual activity is retained.

Irritable bladder is a symptom noted in this group especially in men. In women, ovarian tenderness is not a special feature of neurasthenia, though frequently the ovaries may be extremely sensitive and painful. The testicle in men may also be very painful, and this feature of the trouble is often met with. Perhaps you will be consulted by the sexual neurasthenic more than by any other class of neurasthenics, and what you have to do is to let the patient give you his fullest confidence and let him feel that it is so. Do not ridicule his symptoms, for to him they are only too real and cause him a world of suffering.

PROGNOSIS:—What Clifford Allbut has said about prognosis I heartily endorse, and that is:—"The patient who can lift his eyes to the future will recover; he whose thoughts writhe in the past is on the broad road to lunacy," and so in great measure it is.

The patient who has hope and feels that he will recover has more than fought the battle. There are many things to consider in deciding on a prognosis especially if the organic changes outlined have not had time to so undermine the functions of the organs secondarily involved, especially the stomach and kidneys as to compromise their physiological functions and nutrition and elimination of waste products, and proper prophylactic measures are strictly enforced in conjunction with judicious treatment. Altogether, we find that in those cases of simple and sudden neurasthenia the prognosis is especially good, but where the disease has gone on for a somewhat long period it is apt to run a chronic course.

Neurasthenia cannot be said to shorten life though it may empty it of its achievement. Neurasthenia, like phthisis and not a few other diseases, is a costly mischance, not only in the damage it does, but also in its demands.

PATHOLOGY:—The pathological lesions occurring in neurasthenia have so far not been at all definitely described.

That there are changes is certain. Such men as Gowers, Sajous, Dercum, Allbut, Osler, Church and Peterson and others, say that as yet we know next to nothing of the pathological lesions of neurasthenia. So far all is theory. The experiments of C. F. Hodge (7) perhaps may cast considerable light upon the condition, also those of A. Mosso (8). Neurasthenia does not stand in any relation with anæmia, chlorosis or other affection of the blood. It is supposed to have a pathology of its own, involving the nervous system directly.

Hodge's Theory:—Hodge's experiments were on the English sparrow, swallow and honey bee, the cat, etc. The spinal cells of cat, etc., were stimulated with electricity and this stimulation was prolonged. Irrespective of the animals selected, changes were discovered in the new cells, and, further, these changes were all the same; they involved the



nucleus, cell protoplasm, and even the cell capsule when present, and of each there was a diminution in size and irregularity of outline. Recovery of individual cells was slow, thus, perhaps, demonstrating the fact that the process of recovery in neurasthenia is very protracted.

**Mosso's Theory:**—Mosso thinks that neurasthenic symptoms are possibly one to blood changes. He found that the blood of a fatigued animal when injected into an animal at rest produced in the latter the characteristics symptoms of fatigue.

**Gout and Neurasthenia:**—That there is a strong connection between gout and neurasthenia is clear, and I myself have had an opportunity of seeing a case where symptoms of both troubles were present. Urine of neurasthenics often contains uric acid in great excess. We are led to believe from the researches of Horbachzewsky that it represents the chemical disintegration of the nuclein constituent of cells and if this be true its presence in excess in neurasthenia and the relation of gout to neurasthenia acquires a new significance.

**DIAGNOSIS:**—With the group of symptoms before you, such as I have mentioned as given by Charcot and which I enumerated above, there ought to be no great difficulty in making a diagnosis. Yet a differential diagnosis is frequently required and we have to differentiate between neurasthenia and many other important nervous diseases especially from melancholia, hysteria, general paresis, bromism, locomotor ataxia in its early stage, and hypochondria.

Carter Gray (9); gives some interesting facts in arriving at a correct diagnosis. The main diseases to differentiate are the following:—

Melancholia is characterized by obstinate insomnia, by some curious sensations as a pressure, a creeping ache up or down the back, or actual pain in the back and neck, sometimes running far down the spine and sometimes as far up as the vertex of the skull, by a characteristic melancholic facies, nervous and melancholic agitation or absolute silence, with or without cataleptic symptoms. None of these symptom groups are present in neurasthenia.

Von Hösslin has given an admirable differential diagnosis between hysteria and neurasthenia. And it is as follows:—

| <i>Hysteria.</i>                                                | <i>Neurasthenia.</i>                             |
|-----------------------------------------------------------------|--------------------------------------------------|
| Occurs chiefly in women and always in adult life.               | As frequent in men as in women.                  |
| Marked by its sudden onset perhaps with some sort of fit.       | The onset, unless traumatic, is usually gradual. |
| Has a capricious irregular course.                              | Course is more or less monotonous.               |
| Hallucinations.                                                 | Absent.                                          |
| Clavus, clavus hystericus a localized pain in head in hysteria. | Absent.                                          |



|                                                                       |                                             |
|-----------------------------------------------------------------------|---------------------------------------------|
| Globus, i.e., globus hystericus sensation as if a ball in the throat. | Absent.                                     |
| Definite areas of anæsthesia.                                         | Absent.                                     |
| Concentric abolition of visual field.                                 | Sometimes present.                          |
| Contractures present.                                                 | Absent.                                     |
| Neurosis of joints.                                                   | Absent.                                     |
| Palsies of groups of voluntary muscles.                               | Absent.                                     |
| Hysterical fits.                                                      | Absent.                                     |
| Disposition to exaggerate the malady and to crave for sympathy.       | Disposition to melancholy and hypochondria. |

To these might be added the fact that in hysteria persistent efforts against the disease are nearly always beneficial while in neurasthenia they are usually injurious.

In general paresis, Carter Gray (9), there is a marked stupidity either occasionally or continuously and tremor of the tongue and facial muscles, lost or unequal kneejerks, unequal pupils, a staggering gait and the patient is more stupid and has stupid delusions generally of some exalted type. No case of neurasthenia ever has these symptoms.

Bromism is generally detected by the stupidity, peculiar fœtid breath, and the widely dilated pupils. In the early stage of locomotor ataxia we will find loss of the kneejerk, lightning or stabbing pains, seldom repeated in the same place, usually severe in character, and with these there is often associated some difficulty in micturition or there will be distinct incoordination.

Hypochondria is a fixed delusive idea of a particular disease or local suffering, not mere arguable apprehensions now of this and now of that disease. It is a mental state attended with delusions and it may complicate or follow neurasthenia. Suicide may occur in either malady, though of course more frequently in melancholia.

Again, neurasthenia has frequently to be differentiated from primary dyspepsia, dilatation of the stomach,—in this latter the patient when neurasthenic, does not often vomit, although he may ruminate. Graves' disease is often difficult to discriminate, though agorophobia and claustrophobia are strong arguments in favor of neurasthenia.

TREATMENT:—I cannot emphasize too strongly the fact that neurasthenics are improperly treated by the great majority of physicians. A patient with neurasthenia should be treated with as much attention as a patient with endocarditis or typhoid fever. Above all, in the treatment of neurasthenia, individualization (6) comes into play, and we have to deal with the patient's many idiosyncrasies and failings,—individualization is more necessary to a sure success than in almost any other disease.

The physician who has neither the time nor the inclination to devote such attention and care to the neurasthenic patient should have the frankness and moral courage so to inform the patient and not keep him on, by promises of recovery, which he cannot back up with results; while the physician who feels that he is discharging his duty by telling the patient that his sufferings are "imaginary" and "trifling" can scarcely be said to have the modern conception of this neurosis and is therefore unfitted to deal with it. Let the patient feel that you are in sympathy with him and give him hope and you will soon have his greatest confidence and with this strong factor you may proceed to advise your patient what to do.

Briefly outlined the treatment followed out by the highest authorities is somewhat after the following:—

First of all seek out the cause, whether it be of an hereditary nature or an acquired one. In hereditary cases, if the patient come or is brought to you early in life, then the best methods you can pursue are in the form of prophylaxis. In these cases neurasthenia is more the expression of a permanent quality than of an intercurrent disease. There may be an exceeding keenness of intellect, exquisite taste, etc.,—yet it may be a life of intense ill-health; there may be intervals of brilliant effort and feverish exertion, then followed by exhaustion and apathy, irritability, depression of spirits and bodily suffering. When in hereditary cases we speak of cure we are understood to speak only of the attack on hand. The importance of forming an early prognosis in children and young persons in whom an hereditary proclivity of neurasthenia is present and detected, cannot be overestimated.

Prophylaxis then in these cases must be followed out. From early in life, every means possible should be resorted to, to strengthen the bodily and mental condition.

Exercise in the open air as much as possible, good food, plenty of sleep and not overmuch brain work. The personal hygiene of the patient should be carefully looked into. Intellectual hygienics should of course be of an easy nature. The amount of brain work should be limited. Cold bathing properly prescribed should be an important feature. All forms of outdoor exercise which are healthful and do not cause strain should be recommended.

Alcohol and all other stimulants should be avoided and this is most important. I should also mention that at the age of puberty, when constitutional disturbances so frequently evidence themselves, the patient should be strictly guarded and watched.

*Treatment of the acquired form and of Neurasthenia in general.*—Here again, seek out the cause and endeavour by every means to have it

eliminated, whether it be due to overwork and strain, to home worries, or to whatever cause. As I have said before, make the patient your confidant.

Rest is required, not so much in the simple forms of neurasthenia as in the more severe. In the former, good hygienic rules and plenty of work and concentration will often work wonders. In the more severe forms, absolute rest is generally essential, rest in bed, even with isolation for from 5 to 6 weeks.

The Weir Mitchell treatment of rest, massage and dieting seems to prove of especial value in those severe forms where there is emaciation and debility. I have gone through a great deal of literature on this point, i.e., in regard to the Weir Mitchell or Mitchell Playfair system of treatment and I find that a majority of authorities are against its practice in many cases, though of course modifications of it are of value, especially where the massage has been done away with, as this in many cases predisposes the patient to irritability and often causes consequent insomnia. I am told that Dr. Osler has had wonderful results at Johns Hopkins Hospital. Clifford Albutt says:—that in the cardiac and gastric forms of the disorder no other method can approach the Mitchell method in the comparative certainty of its results and the permanency.

Where the abdominal walls are lax and the splanchnic venous system over full, Mr. Barnard recommends abdominal massage and the adoption of belts to support the feebly acting abdominal walls.

Wet sheets, sitz baths (bathing in sitting posture) and douches are of great value if judiciously used in all kinds of neurasthenia, perhaps more especially in the sexual form, where cold stimulating baths are of especial value. Yet on the whole, in many cases of neurasthenia, where there is debility great judgment should be used in prescribing.

The part of electricity, so far as I can discover, is by most authorities used as only a subsidiary measure. Forms of static electricity are most advised. Faradic bath is said to be of great value. I could never advise any medical man to try the use of hypnotism in this disease, it is of but little if any value.

And now coming to the use of drugs. If possible avoid using them at all. Their part is entirely a subsidiary one and in relief rather than cure, their aid is to be found. Remember that in neurasthenia there is a lack of control of the higher cerebral functions and that the careless administration of drugs, especially of such drugs as morphine, the bromides and alcohol, may lead to disastrous results.

The bromides are of some value more so in the sexual form of neurasthenia; use them in small doses and for brief periods of time, the secret of success. They are also much used in cerebral cases. In spinal cases



with great leg weariness their use is very restricted. In the fretful and sleepless they are very helpful.

Arsenic is of especial value and is recommended by all authorities. Its use is of value in gastric cases—yet it should be used with the greatest care for a period of some weeks duration till the dose has been increased until at least five minims of Fowler's solution are taken after the principal meals. Many gastric cases are cured by the use of arsenic alone.

Valerian may be of service, especially in cerebral cases with loss of memory, vertigo, vague sensations, incapacity, confusions. Should be given in the form of ammoniated tincture and in good sized doses.

There are certain drugs especially opium, whose use is almost a peril to the patient yet in severe gastralgia you may be forced to its adoption given in a pill containing a grain or two of silver oxide with a fractional dose of opium and is of especial value.

Altogether flee opium as you would a deadly poison. Codeine may take the place of opium and is of value.

Phenacetin is of some value in relieving nervous pains. Before giving the patient any hypnotic you should adopt every means in your power to produce sleep by natural methods, and when administered, hypnotics should be given with the greatest care. With a gouty history—for neurasthenia and gout frequently bear a close relation to each other—tr. of colchicum, twenty minims given at bedtime is of value.

For the anæmia, strychnine sulphate with iron and quinine is of value. Yet strychnine I consider is of little value in many neurasthenic cases, though much has been said to the contrary. Quinine sulphate is of use in non-anæmic cases, in a dose of 1/50 gr. t.i.d. increasing to 1/30 gr.

*Diet:*—It is not to be forgotten that in nearly all cases, in all except the strong and the well-nourished man with a good appetite, our chief indication is to push feeding as far as the patient can bear it, much further than many patients are willing to accept. In fatty patients no malt liquors of any description should be given.

The least possible fluid should be granted with meals to these fat patients, but one to two pints a day of an alkaline mineral water should be taken on an empty stomach, on rising in the morning, at noon, and at bedtime. It may seem easy enough to write out a routine line of treatment—a treatment which, if followed out thoroughly and with the best judgment will, yea, is sure to, give good results. On the other hand, where careless measures are adopted, where little sympathy is shown, there may be a life to answer. I have seen such cases.

Perhaps I have not paid sufficient stress on mental diversion as a highly important factor in the treatment of this disease. If possible, aid the



patient in pursuing some healthy hobby, something that will bring him more into the open air and nearer to Nature. If he be fond of botanizing, etc., so much the better. What is to be sought after is the concentration of the patient's mind on such things as will give him pleasure and take his thoughts from himself. Whatever the patient's pursuit in the treatment may be, see that the mental diversion is one which will at least interest him.

No more cruel mistake has ever been made in medicine than that of driving exhausted neurasthenics into amusements which they are not only too wretched to enjoy, but which actually aggravate their symptoms, for it should be always fully realized that fatigue must be avoided as if it were a poison.

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## Original Communications.

### THE ADDRESS IN MEDICINE.

BY

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*Delivered before the Maritime Medical Association, Halifax, July 4, 1901.*

Mr. President and Gentlemen:—

The parable of the unjust judge who finally yielded to the importunities of the litigious widow finds its parallel in the present instance.

Some time in September of last year, on the occasion of the meeting of the Canadian Medical Association in Ottawa, I met the genial president of the Maritime Medical Association, and in an unguarded moment allowed him to sound me on the question of delivering the Address in Medicine at the meeting of the Maritime Medical Association and the Medical Society of Nova Scotia, in the following July. There seemed to be plenty of time to consider the matter, and I gave I fear an evasive answer, trusting in my innermost soul that time would obliterate on both sides the recollection of this interview. My hopes, however, were shattered some months later by receiving a more pressing invitation, and, while still balancing between yea and nay, a second letter arrived informing me that the Executive Committee was to meet in two or three days to make out the programme. I felt that an immediate decision was unavoidable, and somewhat reluctantly telegraphed Dr. Muir an acceptance of his offer. Since then I have had occasion to repent at leisure.

That I am delighted on the present occasion to meet such a representative gathering of my confrères of the Lower Provinces, goes without saying, but I should have preferred to come as an appreciative

listener, rather than to attempt to interest you with an address the inadequacy of which I keenly feel and regret.

The choice of a subject that would interest the largest number of my hearers was not the least difficulty to be met, for on such an occasion one must not on the one hand be satisfied with glittering generalities, much less platitudes, nor on the other, treat a particular subject with a detail that might become wearisome, or at least would not be in keeping with the general purpose of an address in the broad field of Medicine. And herein precisely lies the difficulty; for the larger the subject the harder it is to present it in an acceptable and intelligible form.

As the old rhetoricians were wont to say—the greater the extension the less the intention. Many subjects of the greatest professional interest, moreover, which were formerly in the sphere of thought and action of the physician (using the term in its restricted sense), are now claimed as their own by the specialists or the general surgeon. In medical and surgical practice, as in international politics, there are “spheres of influence,” which are more or less constantly changing, and fields of thought and action are “gerrymandered” not less than political constituencies. Consider for a moment the inroads that the general surgeon and the specialist have made, and are making, into the “sphere of influence” of the physician. Perhaps the earliest, and to my mind an unjustifiable, transference has been that of syphilis, first to the province of the general surgeon, and then to that of the genito-urinary specialist. In nearly all of its manifestations, certainly in its later and more serious ones, syphilis is essentially a medical disease, amenable to our two best-known specifics, and not requiring operative intervention or instrumentation of any kind. I know that on this side of the water, physicians commonly treat syphilis, but it is not so everywhere, and there is less excuse for an extensive article on syphilis in a text-book of surgery, than for an article on appendicitis in a text-book of medicine. In the case of appendicitis the change of allegiance, so to speak, has undoubtedly been for the well-being of the patient and the good name of the profession, and it cannot be denied that there is a satisfactory contrast between the new style of patient and the old—the old so often with sunken cheeks and eyeballs, thready pulse and distended abdomen, succumbing to general peritonitis under a double poisoning by toxins and heroic doses of opium—and the new, with almost immediate relief of pain, the avoidance of general peritoneal infection, rapid convalescence and full diet in ten days or a fortnight.

*A priori*, it would seem that a tuberculous peritonitis with effusion

should be as amenable to purely medical treatment as a pleurisy with effusion (which is, in the vast majority of cases, a tuberculous lesion) both being localizations of tuberculous infection to serous membranes, and yet we know such is not the case. It is certainly proved by statistics that opening the abdomen and draining the effusion, not simple tapping, is more likely to be followed by a favourable result than if a purely expectant treatment, perhaps with paracentesis, be adopted.

Cholelithiasis is another affection that the surgeon has laid claim to and in which the most brilliant results have been achieved. Unquestionably it is better that the surgeon should incise the common bile-duct, remove the obstructing stone and neatly sew up the duct, than that the physician should make a "mayonnaise" of the contents of his patient's duodenum by the administration of massive doses of olive oil, in the futile hope of washing out or dissolving, in some mysterious way, the offending foreign body. And if the stone be in the cystic duct, how much more rational it is for the surgeon to perform a cholecystotomy, than to trust to luck that the stone will slip back, or to administer drugs in the hope that by their means a body measuring half an inch in diameter will be forced through a corkscrew-like tube the size of a crow-quill. A comparison between the size of the average gall-stone and the diameter of the cystic duct is not calculated to inspire one with a blind belief in Providence.

Still more recently surgery has stepped into realms that were once the undisputed territory of the physician.

Ulcer of the stomach, at least in its two most formidable events, hæmorrhage and perforation, has benefited largely from surgical intervention. In the case of cancer of the stomach the surgeon sarcastically remarks that if the physician would only make an early diagnosis he would cure the patient, and in any case he is willing to help the patient—and the physician—by easing the downward path of the patient by a gastro-enterostomy.

One might extend the list by mentioning simple gastrectasis and gastroptosis, and enteroptosis, all of which may at least be alleviated by surgical procedures.

Even ascites from cirrhosis of the liver has found its surgical enthusiasts, and now pulmonary tuberculosis is to be arrested and even cured by a surgical procedure, the production of an artificial pneumothorax by pumping an innocuous gas into the pleural sac. There are some who think that a year or two in the Adirondacks, the Laurentians or Colorado is a less hazardous method of arriving at a similar result.



Aneurism of the aorta is undoubtedly in some comparatively rare cases influenced for good by the insertion of gold wire into the sac, combined with the passage of an electric current through the wire, but I confess I read with some surprise the sweeping statement made quite recently in the journal of a very celebrated institution, to the effect (I quote textually) that "this dreadful malady is usually a surgical disease."

It is true the author of this remarkable statement is a gynæcologist, and we know that gynæcologists are particularly sanguine in regard to operations. The results actually given by the writer do not, however, bear out his contention. In 23 cases treated by the combined wire and electrolysis method, relief of pain and other symptoms occurred in nine cases, or 39 per cent., and possibly life was prolonged, but in 10 cases, 43 per cent., "death was probably hastened." Four cases, three thoracic and one abdominal, were cured, but, says the writer, "here we must speak with reserve, for knowledge of the living patient or proof gained by autopsy are at our command for but two of these cases." No doubt aneurism of the aorta is in the vast majority of instances a hopelessly fatal disease, but cannot many of us point to cases in which the symptoms have been markedly alleviated and life prolonged for many months, even of comparative usefulness, by periods of rest in bed, restriction of diet and drink, and possibly the use of iodide of potassium? Such measures at least have no tendency to shorten life.

It would not need a great stretch of the imagination to conceive that in the not distant future, some daring surgeon should devise a "valvulotome" by means of which a button-hole mitral valve might be safely incised and then dilated, or taking the opposite condition, an instrument for "taking in the slack" and shortening up the *chordæ tendineæ*.

We have long since ceased to be surprised at anything. One might well ask if there is anything else left for the physician. The infections? Is not the hope of the future in bacterio—and serum—therapeutics, and here again, is it not the bacteriologist, the laboratory worker, who discovers the antitoxins and the curative and prophylactic sera that the physician uses in his daily practice? Moreover, preventive medicine is ever narrowing this field of action, and we may look forward to the state of affairs portrayed some years ago in a caricature of "Punch," where a long procession of disconsolate physicians is represented wandering the streets of the model city "Hygeia" crying with one voice—"we have no work to do."

It may seem strange to you that in an Address in Medicine I

should so inconsistently raise the pean of victory for surgery and bacteriology. Believe me, this is not done in an envious or carping spirit, but merely to illustrate the fact that in the matter of the successful treatment of disease, the surgeon and the bacteriologist have undoubtedly made greater strides than the physician, though in the purely scientific aspects of professional knowledge I think it must be admitted that the physician has at least equalled the attainments of his surgical colleague.

The chief advances in medicine (using the term in its restricted sense) have been in the elucidation of obscure points in etiology, the more accurate description of the clinical phenomena of disease, and the improvements of methods of diagnosis.

To a few of these I would especially like to draw your attention. The field being so vast and the labourers so many, it would be impossible to do justice to the whole subject, and I trust you will forgive me if I take as illustrations a few of the more common affections which form the bulk of the daily experience of the physician.

Among these, pulmonary tuberculosis claims the first place on account of its extensive prevalence and the prominent place it occupies in the mortality statistics of nearly every country on the face of the globe. Since the epoch-making discovery of Koch, nineteen years ago, there is surely no one, whose opinion is worth considering, who does not recognize that tuberculosis has been finally and definitely removed from the group of so-called constitutional diseases, to occupy its rightful place among the specific infective diseases.

The recognition of this fact has profoundly modified our views in many directions. Heredity as a factor in the transmission of tuberculosis has lost ground in proportion to the ever multiplying proofs of the frequency of infection, and though it cannot be denied that a certain bodily condition, made up of many as yet imperfectly defined elements, does form a favourable soil for the growth and multiplication of the tubercle bacillus, it also cannot be denied that an individual inheriting such a bodily condition, if removed from all the known sources of infection and placed in a suitable environment is not more liable to develop pulmonary tuberculosis than his more favourably constituted fellow-being. Many of the so-called hereditary cases of pulmonary tuberculosis are nothing more than examples of family infection, one member after another of a family becoming infected through a period extending perhaps over many years. Most of us could cite cases in support of this view; I know of several that can be explained satisfactorily in no other manner. It would be interesting to know whether this method of family transmission, what might be

called pseudo-heredity, is to be observed more frequently in the country and in small towns than in the larger centres of population. City folk change their domicile more frequently than the inhabitants of rural districts, and one would expect that family infection would be found more frequently in the case of families who had occupied the same house for a long term of years.

A medical friend practicing in a small village in the Province of Quebec, a health resort for city people in the summer, told me that he had come to the conclusion that so far as his district was concerned, pulmonary tuberculosis, which was quite common there, was in most instances due to family infection in the domicile.

That house infection, whether of members of the same family or of subsequent occupants of the infected house, is a very common factor in the spread of tuberculous disease can hardly be doubted when one examines the maps of districts in certain cities, where the infected houses have been plotted, showing the frequency of tuberculous cases in certain houses, while the immediately adjoining dwellings have remained free from any cases of the disease. Public ordinances forbidding spitting in public buildings and factories, and in tramways, railway carriages and other public conveyances, are no doubt very useful, but I am convinced the danger from such sources of infection is infinitesimal compared with that incurred in living from year to year in a house that is, or has been infected by one or more individuals suffering from chronic pulmonary tuberculosis, and until strict disinfection of such infected domiciles becomes the law and is scrupulously carried out, we must not expect to see any great diminution in the incidence of pulmonary tuberculosis. No doubt if proper precautions were taken by the infected individual in the regard to the disposal of his expectoration the danger of infection would be minimized, but knowing how rarely such precautions are systematically observed by the patient or enforced in any but a half-hearted way by most physicians, except in sanatoria, it seems hopeless for the present to expect any diminution of house-infection by this means. It might seem superfluous at the present time to insist on the necessity of early diagnosis in tuberculous disease of the respiratory passages, were it not a fact that in so very many instances the diagnosis is still made too late—not necessarily too late for a fair prospect of arrest or even cure of the disease—but too late in the sense that it might and should have been made earlier, and have saved the patient both time and expense in his subsequent search for health. I am not going to weary you with a recital of all the subjective and objective signs that point to early tuberculous infection of the lungs; any properly trained physician knows these.



Failure to make an early diagnosis is due too often to sheer carelessness or hurry on the part of the physician—to errors of omission rather than of commission. A hasty examination, with only a few square inches of the upper part of the front of the chest exposed, or worse still a perfunctory so-called auscultation through two or three thickness of clothing, results in a diagnosis of a “cold” or a “bronchial catarrh,” and meanwhile the the bacilli are doing their work thoroughly.

A curious thing is that very often the diagnosis is persisted in, though the “bronchial catarrh” has not “yielded to the usual remedies,” and something more radical in the drug line is then tried. It ought to be an axiom that any “cold” or “bronchial catarrh” that has lasted a month is to be looked upon with the greatest suspicion, and calls for a thorough examination of the respiratory tract, if that has not already been done.

And indeed, why wait so long? There is, moreover, no excuse for not examining the sputum for tubercle bacilli in all cases of disease of the respiratory passages. If one does not possess the material, or is not familiar with the simple technique, required for this examination, is it not a very easy matter to thinly smear half a dozen microscope coverslips and send them, or perhaps better still a specimen of the sputum in a clean bottle, to the nearest hospital that possesses even the most elementary clinical laboratory? A patient will not object to a fee for such an examination if it be made clear to him that it is a necessary preliminary not only to the diagnosis of his case but to its successful treatment. Thorough physical examination of the chest and routine examination of the sputa would certainly save a number of patients from a long and too often eventually fatal illness. In a few cases the examination of the sputum may not be conclusive, while the physical signs and the subjective symptoms still point strongly to tuberculous disease. If possible in such cases the patient should be tested with tuberculin—but, I repeat, such cases are rare.

It is to be supposed that once the diagnosis is established, and that early, the patient is to be told frankly what is the matter with him, and urged to place himself in surroundings most favourable to speedy recovery from his incipient infection.

Practically this means that he must have rest in the open air, and as abundant a diet as his digestive organs will admit of, preferably in those climatic surroundings which we know from experience afford the largest percentage of recoveries from incipient pulmonary tuberculosis. The first two desiderata, rest and food, can be obtained anywhere and by nearly everyone. It is in regard to the last that the difficulty lies.



Social and domestic questions arise in very many cases that militate against change of domicile, but by insistence these may often be overcome. Speaking generally, one does not usually get well from tuberculosis in the locality in which it was contracted, and yet with those that for one reason or another cannot or will not change their residence, much may be done by insisting that if they remain at home they must live as they would do, were they sent to the Adirondacks, the Laurentians, the Canadian Rockies or Colorado.

Before leaving the topic of pulmonary tuberculosis I wish to repeat the opinion already expressed, that pleurisy with serous effusion, the so-called *pleuritis a frigore*, is in the vast majority of instances a manifestation of tuberculous infection. This conception, advanced some twenty years ago by the French clinicians, especially by Landouzy, and based on evidence of a clinical, pathological and experimental nature, is certainly gaining ground. Osler expresses himself decidedly of this opinion. "I confess (he says) that the more carefully I have studied the question the larger does the proportion appear to be of primary pleurisies of tuberculous origin." The evidence rests on the following facts:—

Firstly, in a number of instances, undoubted evidence has existed of prior or concomitant tuberculous manifestations in the pleuritic patient.

Secondly, in individuals who were apparently healthy before the onset of pleurisy, and who have died during the period of active effusion, the post-mortem examination has proved the tuberculous nature of the pleurisy.

Thirdly, a large number of cases that have recovered from pleurisy with effusion sooner or later present unequivocal signs of tuberculosis, usually of the lungs. This is so common that I never fail to ask a tuberculous subject if he has ever had pleurisy with effusion, and though I cannot give you exact statistics, it is remarkable how often the answer is affirmative. The experimental evidence, however, is even more conclusive.

Guinea-pigs inoculated with a sufficient quantity (15 cub. cm.) of the serous exudate succumb in very large proportion to miliary tuberculosis. It is true that even careful microscopic examination of the serous exudate fails in most cases to reveal the presence of tubercle bacilli, but it must be remembered that the bacilli are few in number and the effusion usually copious, so that the inoculation test with massive doses of serum, is more likely to prove positive than the search for bacilli.

The experimental evidence is further strengthened by the fact that

a large number of patients with serous pleurisy react to tuberculin, even when there is absolutely no evidence of tuberculous disease in the viscera.

The recognition of the tuberculous origin of serious pleurisy has somewhat altered our opinions as regards the proper treatment to be adopted in such cases, particularly in the matter of the removal of the effusion by tapping. It has been shown that the exudate contains a small amount of tuberculin, and the absorption of this is believed to produce at least a temporary immunity against further extension of the tuberculous process in the tissues.

Certain it is, that serous pleurisy tends, more than any other tuberculous lesion, to run a more or less definite course and to end spontaneously in recovery. If this be so, it follows that tapping ought not to be performed early and often, but should be reserved for those cases in which an excessive amount of fluid threatens either, immediately, the proper functioning of the circulatory apparatus, or, ultimately, the integrity of the lung from too long continued pressure.

Another corollary is that the subjects of serous pleurisy, should in their convalescence have the same treatment as individuals suffering from incipient pulmonary tuberculosis, that is to say, hyper-alimentation and a more or less prolonged sojourn in suitable climatic surroundings. In any case it is well to keep such patients under close observation for the first indication of pulmonary involvement.

Turning now to typhoid fever, which next to tuberculosis is one of the most wide-spread of the infections, there is little that is new to be said concerning its etiology. That it is of microbic origin is now universally admitted, and that it is mainly a water-borne and easily preventible disease is no less true, as has been demonstrated on a large scale in several communities. For its appalling prevalence in most of the large centres of population in America, and in many of the smaller ones, we have to thank the apathy, not to say criminal negligence, of our municipal governing bodies in matters relating to the public health. They are too busy granting important franchises for nothing to powerful corporations and letting out public contracts to the highest bidders to have time to give such an unproductive matter as the health of the citizens they represent. Take the city of Montreal, for instance. How can the municipal council be expected to take serious and intelligent action in the prevention of typhoid fever, which is at all times endemic, and too frequently attains the proportions of epidemic distribution in that city, when sectional bickerings and the narrowest ward politics prevent us from having even an approach to adequate accommodation for actual cases of the more virulently contagious diseases?

But, really, the question is too-depressing to dwell upon, and I crave your attention for a few remarks on the treatment of typhoid fever in general, and in particular on the diagnosis and treatment of its most formidable event—perforation of the bowel.

A fairly extensive experience of this disease may give a certain personal flavour to what I have to say, and for this I apologise beforehand. In the matter of diet, to begin with, I may say that my opinions have undergone a considerable, and, I trust, a salutary change. That an exclusive diet of milk and animal broths is the ideal one for the enteric patient, is at the present time untenable. Brought up in this faith, I have since many years, entirely abjured it, and in common with many others of more extensive experience, I am in the habit of allowing the patient to take throughout the course of his illness, such articles as gruel, custard, oranges, jellies, soft-boiled or poached eggs, clear soups and purées, milk toast and even scraped beef, provided always that such food is well borne by the stomach and does not produce intestinal disturbance. Such a dietary appears to be innocuous, and certainly relieves the monotony of frequently recurring libations of milk.

I am a frank advocate of the treatment of typhoid fever by hydrotherapy, according to the method of Brand, or a slight modification of it. None of the objections urged against this method, and they are many, and some well-grounded, ought to weigh in the balance against the mass of evidence that points to ultimate good for the greatest number. Hydrotherapy is not, and never has been, claimed to be a specific treatment. It is antithermic, tonic to the cardio-vascular system, sedative and tonic to the nervous system, and eliminative through the renal organs, but it is not bactericidal or antitoxic. Doubtless in the near future the ideal treatment for the infections in general, a reliable antitoxin, will be discovered, and indeed we have the promise of this in the partial success of the recent prophylactic inoculations practised in the South African campaign and in India. Pending this, I refuse to be led away by any *Ignis Fatuus* of antiseptic or eliminative treatment based, if not on erroneous ideas of the pathology of the disease, at least upon an unreasonable faith in the efficiency of small doses of feebly antiseptic substances upon the length and breadth of the intestinal mucosa and, still more incredible, upon micro-organisms distributed in the deeper tissues, the viscera and the circulating blood.

In the whole field of medicine there is probably nothing that calls for more careful investigation of clinical phenomena, a nicer balancing of probabilities and a greater judgment than the early detection of typhoidal perforation; and its immediate corollary, the advisability or the non-advisability of operative intervention. The early diagnosis, that is,



sufficiently early to afford a reasonable hope of success for the surgeon, is fraught with many difficulties, and even the most experienced clinicians have made mistakes, on the one hand diagnosing a perforation where none was found to exist at the time of operation, or on the other, deciding against perforation which an autopsy subsequently revealed.

Uncomplicated typhoid is, so far as the abdominal symptoms are concerned, usually a painless disease. It is true that transient meteorism and diarrhoea (especially if profuse), may be accompanied by wandering colicky pains in the abdomen, but the occurrence of sudden, severe, localized abdominal pain in a typhoid patient is to be held as very strong evidence of perforation of the bowel, or at least of a localized peritonitis immediately preceding a perforation. This should in all cases be a note of warning, and if it be associated with rigidity of the abdomen on palpation, it is difficult not to draw the immediate inference that perforation has actually taken place. There may at this early period be very little constitutional disturbance. Probably the pulse rate will rise, but I am convinced that any reliance on variations of the temperature curve as an aid to the diagnosis is unwise. Nausea and vomiting will not necessarily be present, and to wait for meteorism to develop is not making an early diagnosis. The point that I wish to make, however, is that in making an early diagnosis the inferences drawn from the local signs in the abdomen should outweigh those derived from the general condition of the patient.

No reliance is to be placed upon an increase in the white elements of the blood as an indication of early peritoneal infection. Of this we have had several instructive examples quite recently in Montreal. Delirium or a stuporose condition and excessive meteorism vastly enhance the difficulty of early diagnosis of perforation, and indeed may make it impossible. This, it may be said in passing, is no small argument in favour of hydrotherapy, for delirium, coma and meteorism are of the rarest occurrence in patients who have been systematically bathed.

Given an early diagnosis of perforation, should the patient be given the chance for life that is afforded by surgical intervention? Undoubtedly, yes! in many, probably the majority, of the cases. Medically treated, perforation is practically a hopeless condition from the outset, and surgically treated, the patient has at least a chance of recovery—how much of a chance it is yet too early to say, for we must have a larger experience and more extensive statistics, but even those we have are quite encouraging. It must be admitted that there are some cases in which it is better, however reluctantly, to let the patient die with the peace of mind and body borne of adequate doses of morphia, than to hasten his demise by a few hours for the sake of viewing later



at the autopsy, an intestinal suture that is all that it should be, impervious to gas and liquids. These are the cases that are the most worrying and in which a sober judgment is most needed. It is difficult to say in a general way what leads the physician and the surgeon to agree upon the non-advisability of operation. Sometimes it may be the rapid onset of signs of general peritoneal infection, sometimes a very rapid pulse or cyanosis, sometimes the age or general condition of the patient, sometimes in prolonged cases, a fear that an operation would be the proverbial last straw. If the patient be in good condition this last consideration need not trouble the practitioner, for it does not appear that the operation, even if it should turn out to be an exploratory one, (which has happened more than once) diminishes the patient's chances of recovery from the typhoidal infection, or materially alters the subsequent course of the illness. Finally, as regards the time for operative intervention, it seems to be the latest opinion that, if possible, the operation should be undertaken not later than twelve hours after the occurrence of the first symptoms, but that the patient should be allowed to recover from the actual, or supposed, shock immediately following a perforation.

I fear I may have become wearisome with details of what may not be a "live issue" with many of you, and that little time is left for other topics worthy of at least a brief mention. Among these, few can lay claim to greater interest than the diagnosis of meningeal inflammations in the light of two comparatively recent, and as yet insufficiently appreciated, methods of physical examination—Kernig's sign and rachicentesis, or, as it is better known, the lumbar puncture of Quinke. Both of these procedures are really very valuable additions to the physician's diagnostic armamentarium, the first enabling him to affirm or deny the existence of meningeal inflammation in general; the second, in addition, affording him a certain method of differentiating the various forms of meningitis according to the bacterial species that is the cause of the inflammation.

Kernig, a Russian physician, described in 1884, a physical sign which seemed to him to be present exclusively in affections of the pia mater, and particularly in those attended with inflammation. This sign consists in a tonic contraction of the flexor muscles of the thighs, when the thighs are at a right angle with the body and the legs extended upon the thighs.

In a healthy individual it is possible to extend the leg completely, or almost completely, with the thigh in such a position, while in a patient suffering from meningitis it will be found that, soon after the leg has been extended a little beyond a right angle with the thigh, a

progressively increasing resistance to further extension is offered by the marked tonic contraction of the muscles at the back of the thigh. If the attempt to extend be persisted in, pain in the lumbar region is produced, and instead of a further extension of the leg being effected, the pelvis will be raised.

The sign may be elicited in two ways, either by having the patient sitting straight up on the edge of the bed, in which case, extension of the leg to a certain point immediately produces the phenomenon, or, with the patient lying flat on his back, the thigh is first brought to a right angle with the body, and the leg then extended until flexor spasm is observed.

It is remarkable that such an easily recognized sign should have attracted but little notice, and that not very favorable, for 14 years.

A revival of interest in this test was inaugurated by the publication of Netter's statistics in 1898 and 1899, and those of Herrick, of Chicago, in 1899. From these it appears that Kernig's sign was found in ninety per cent. of all cases of meningitis.

In 100 cases of disease other than meningitis Herrick found this sign in only two; in one of these there was a cerebral lesion (subdural hæmorrhage), in the other a local cause of contracture in the lower extremity.

Before applying this test it is necessary to exclude any local cause for flexor contracture, such as arthritis of the knee or hip joints, organic disease of the spinal cord, and sciatica.

Though no entirely satisfactory explanation of this phenomenon has as yet been advanced, it is highly probable that it is partly due to an exaggerated tonus in the muscles at the back of the thigh.

The lumbar puncture of Quincke, is a less simple means of detecting meningeal mischief, but affords at the same time more definite information.

Proposed by Quincke in 1891, this method of diagnosis, was not utilized to any extent, in America at least, until five or six years ago, and even now has not obtained the general recognition that its value entitles it too. In a text-book of Medicine published this year in England, I find no mention of lumbar puncture as a means of diagnosis in meningitis. The technique is not difficult. The patient lies in bed on the right or left side, according to the choice of the operator, with the back well bowed, the knees drawn up toward the abdomen and the head and neck well bent forward. To ensure stability in this position it is well to have a firm pillow, or sand-bag, under the flank and abdomen, and an assistant holding the patient's legs and shoulders, to prevent movement of the spine during the puncture. The lumbar

region of the spine is thoroughly scrubbed with soap and water, and then washed over with sublimated alcohol. Having previously disinfected his hands, the operator selects either the second or the third lumbar space, which is usually easily located and may be marked beforehand, and an area of skin the size of a five cent piece over the middle of either of these spaces is made anæsthetic by a sub-epidermal injection of cocaine. An aspirating needle of small calibre, not less than four and one-half centimetres long for children, and seven centimetres long for adults, previously sterilized by boiling, is then slowly thrust forward and a little upward and inward into the space selected, one centimetre from the median line. As the spinal dura is pierced a sensation will be felt as if the point of the needle were going through a thin and tense bladder of india-rubber. When this occurs the operator should stop, and almost immediately the cerebro-spinal fluid will begin to flow from the needle, usually more or less rapidly drop by drop, but sometimes in a distinct jet. The fluid should be collected in a sterilised test-tube for microscopical and bacteriological examination. It is not as a rule necessary or advisable to exhaust the fluid with a syringe. The needle is then withdrawn, and the seat of the puncture may be smeared with collodion. The quantity removed varies a good deal, but it is common to get from 10-20 c. c. in cases of meningitis. The character of the fluid as it collects in the tube gives important information, apart from any further examination. If absolutely colorless and clear, it is normal cerebro-spinal fluid; if only slightly turbid and of a very pale straw yellow tint, the case is almost certainly one of tuberculous meningitis, and if quite turbid and rapidly depositing a sediment, it is most likely to be either cerebro-spinal fever, pneumococcus infection, or some secondary septic meningitis. In any case, turbidity of the fluid, however slight, is due to cellular elements, and cellular elements mean an inflammatory process, normal cerebro-spinal fluid being free from cells.

Microscopic examination of the sediment shows mainly two types of white blood cells, the ordinary polymorphonuclear leucocyte, or pus cell, and the small mononuclear leucocyte, or lymphocyte, with large nucleus and a thin rim of protoplasm. It is constantly found that the pus cell is found in large numbers in cerebro-spinal fever and the septic forms of meningitis, while the lymphocyte is almost the only cell found in tuberculous meningitis. Bacteriological examination of dried cover-slip preparations of the sediment shows the *diplococcus intracellularis meningitidis* of Weichselbaum in the case of cerebro-spinal fever, usually in considerable numbers, while a careful search may reveal a very few tubercle bacilli in tuberculous meningitis. In



the other forms we find the pus organisms or the diplococcus of pneumonia. In suspected tuberculous cases, the bacilli being usually very few and hard to find, it is better to use animal inoculations, if absolute proof is desired. I wish to insist however, that a very slightly turbid and coloured fluid (almost like Montreal water) with scanty sediment containing almost exclusively the small celled leucocyte, is practically evidence of the tuberculous nature of the meningitis.

Lumbar puncture is not a dangerous operation, if carefully and aseptically carried out, and personally I have not seen any harmful results following it, though it is stated that in some cases of cerebral tumor untoward symptoms have been observed from a too sudden lowering of the intracranial pressure.

One would suppose that Chlorosis was a disease about which little that was new could be said. We are thoroughly familiar with its symptoms and with its clinical course: its predilection for the female sex, its frequent association with latent pulmonary tuberculosis, or with ulceration of the stomach, and the fact learned from repeated experience, that with rest, fresh air, good food and the exhibition of ferruginous preparations and laxatives the great majority of chlorotics are eventually restored to health. We know further that the blood count in such cases very constantly shows a notable diminution of the hæmoglobin value in the individual red corpuscle with very little, or no reduction, in the actual number of the red blood cells.

Though no definite or satisfactory explanation of the relative poorness of the hæmoglobin in the corpuscles had been given us, we had been taught that it was due to a deficiency in the production of hæmoglobin—a defective hæmogenesis—the underlying cause of which was more or less obscure.

It would seem, if certain recent experiments are substantiated, that our ideas of the ultimate etiology of chlorosis must be entirely modified. I refer to the work lately carried out in the pathological laboratory of Queen's College, Belfast, by J. Lorrain Smith. The details of these experiments are too technical to be entered into on the present occasion. It will be sufficient to say that the method consists in administering a given volume of gaseous carbon monoxide to the patient and estimating from this the total oxygen capacity of the blood, hæmoglobin having the same degree of saturation for both of these gases. The total oxygen capacity, or in other terms, the total amount of hæmoglobin, having been thus ascertained, the volume of the blood is estimated by comparing a measured quantity with an equal sample of ox-blood, of which the oxygen capacity per 100 cc. has been determined. Applied to the investigations of the different



forms of anæmia, this method gave instructive results, the most important of which was, that the total volume of the blood was much more variable than the total amount of hæmoglobin.

It was found that in chlorosis the volume of the blood was increased in proportion to the severity of the disease, the total amount of hæmoglobin at the same time remaining approximately normal. This increase of the normal plasma of the blood is accompanied at first by an increase of the cellular elements, and consequently, since the total hæmoglobin remains the same, we have a diminished amount of hæmoglobin for each corpuscle. In chlorosis, then, there is a condition of hydræmic plethora, which serves to explain many of the clinical phenomena of the disease—the dyspnœa and the rapid action with hypertrophy and dilatation of the heart, necessitated by the larger amount of blood that is to be driven through the pulmonary and systemic vessels. Probably also the functional cardiac murmurs are due to over-distention of the vascular system. Though the author does not mention it, is it not likely also that we have in this demonstration an explanation of the unquestionable fact long ago insisted upon by the late Sir Andrew Clark—though for an entirely different reason—that purgatives which deplete the circulation are of the greatest value in the treatment of chlorosis?

In the sphere of etiological research nothing more brilliant has been accomplished in the last few years than the discovery of the mode of infection in malaria and yellow fever. In the case of malaria we have been able to follow step by step, in both medical and non-medical current literature, the accumulating proofs that suctorial insects are the chief, if not the only, agents in the transmission of this disease from one person to another.

Through the initial labours of Surgeon Major Ross, of the Indian Medical service, and the subsequent investigations of Grassi, Bignami and Bastianelli, in Italy, and of the Sierra Leone Commission, it has been definitely established that certain mosquitoes of the genus *anopheles* are the habitual intermediate hosts of the malarial parasites of men, that these parasites undergo certain changes in the bodies of mosquitoes infected by them, and that such infected or as they are now termed—malariated mosquitoes, are capable in turn of conveying malarial infection to human beings. It has further been shown that protection from mosquito-bites is the most effective means of preventing the infection of the individual by the malarial parasite, and that where the malaria bearing mosquito does not exist, malaria as an endemic disease is unknown.

By these researches a flood of light has been thrown upon the dis-

tribution of the malarial fevers, and a satisfactory explanation afforded both of the peculiarly localised endemic character of malaria, and of its different incidence in localities possessing the same climatic, telluric and geographical characteristics.

For a similar elucidation of the vexed problem of yellow fever infection Science is indebted to the labours of Surgeon Walter Reed of the United States Army and his collaborators in Cuba. In this case the infective agent of the disease is as yet unknown, Reed having conclusively proved that the much talked of *bacillus icteroides* of Sanarelli stands in no causative relation to yellow fever.

The investigations, undertaken during the winter of 1900-01, were directed entirely to the mode of infection and were carried out with a precision and thoroughness that compel acceptance of the results obtained. They form indeed a model for similar scientific research and will be a lasting monument to the industry and competence of their authors. In a carefully selected experimental sanitary station, protected from infection from without by the most stringent regulations and under daily medical supervision, a number of non-immune individuals were subjected, with their full consent, to the repeated bites of mosquitoes (*Culex Fasciatus*) that had previously fed on the blood of yellow fever patients in the second and third day of their illness and had been kept not less than twelve days at an average temperature of 82 degrees. As a result of this experiment four out of five of the individuals bitten developed an attack of yellow fever in from forty-one hours to five days and seventeen hours, while the other non-immunes who had not been bitten remained entirely free from the disease. In the one negative result, it was subsequently found that the mosquito used in the experiment had not been kept at the temperature required to develop infective power. When this little epidemic of yellow fever had subsided, a sixth non-immune was inoculated with a positive result, making five successful inoculations out of six. In another series of experiments, blood from yellow fever patients was injected subcutaneously into non-immunes, with three positive results and one negative one. Again, to decide whether or no yellow fever is conveyed by fomites from bedding or clothing soiled with the secretions, discharges, or blood of yellow fever patients, non-immunes were exposed for a prolonged period to such possible sources of infection with an entirely negative result in every case. The conditions under which the experiment had to be performed are so gruesome and revolting, such as the wearing of the unwashed and foully-soiled bed clothing of yellow fever patients, and worse still, that it is a marvel that any human being could consent to be subjected to it. Finally, to determine how a house

became infected with yellow fever, a one-room, mosquito-proof, but thoroughly ventilated building was erected and in this were set free a number of mosquitoes that had bitten yellow fever patients. Two non-immunes were then allowed to enter this building and remain only long enough to get bitten several times, about half an hour. One of these men developed an attack of yellow fever in a little under four days. On the other hand two non-immunes slept in this building for eighteen consecutive nights, protected by a wire screen partition from the mosquitoes and both remained in perfect health. It is hardly possible to over-estimate the importance of these very conclusive observations. Not only will the prophylaxis of yellow fever be established on a thoroughly scientific basis, but a vast amount of needless and troublesome disinfection will be saved to those who have either actually come into contact with yellow fever patients, or are returning from a locality where yellow fever is prevalent.

I cannot conclude this already too lengthy address without thanking you, Mr. President and gentlemen, for the honour you have done me in affording me the opportunity of addressing you to-night, and while I regret that my remarks have fallen so far short of the importance of the occasion, I assure you that I shall cherish a vivid remembrance of your unfailing kindness and whole-hearted hospitality, and of the very pleasant days spent in and about the beautiful city of Halifax.

## ADDRESS TO GRADUATES IN MEDICINE.

BY

WILLIAM GARDNER, M.D.,

Professor of Gynæcology, McGill University ; Gynæcologist to the Royal Victoria  
Victoria Hospital, Montreal.

*Delivered at the Annual Convocation in Medicine of McGill University,  
June 14, 1901.*

GENTLEMEN OF THE GRADUATING CLASS:—

It is my pleasing duty this year, on the part of the Faculty, to briefly address you on this, to you, great occasion of your attaining to the Degree of Doctor of Medicine and Master of Surgery of this University.

Let me then first extend to you our most hearty congratulations on this auspicious occasion, and to say how great an honor I feel it to be, that I am thus permitted to be the first, metaphorically speaking, to take you by the hand. Believe me, gentlemen, this is no empty form of words. Who, I ask, can so heartily sympathize with you and enter into your feelings as your teachers, who have been for years straining their energies in your interests, and have themselves passed through similar experiences. I cannot but recall how, thirty-five years ago, I occupied a position like yours to-day and proudly if blushingly received my degree at the hands of our late noble, gifted, and high-minded principal, Sir William Dawson. No words of mine are likely to influence or enhance your estimation of the value of the parchments you have thus acquired, but I cannot refrain from reminding you that to-day you graduate from a medical school whose curriculum is equalled by few and excelled in severity by none on this Continent, and we proudly point to the approval of a discriminating profession and public, as shewn by a steadily increasing number of candidates for our degree. We are constantly stiffening our requirements and narrowing our portals but the number of our students constantly increases and in the session just closed has reached a figure never before equalled.

Gentlemen, it is customary, and we believe it to be the duty of those who have been your teachers, when you are thus dismissed, when the bond which has linked us for four years as preceptors and pupils is to be severed, to improve the occasion by addressing you a few words of counsel and warning. Success in this the profession of your choice, is of course the object of your ambition. With all our hearts, gentlemen, we wish you that success in the best sense of the word. We have endeavored to impress you with the fact that if you are to succeed in



such a sense, you must deserve it. By a successful career I do not mean that of necessity it must be a long and brilliant one. There are many obscure village practitioners who, in reality, are more successful than others who seem to float on the highest wave of worldly prosperity. To the country or village practitioner are given opportunities for the development of independent judgment and self-reliance, faculties or qualities which often remain latent in his brother of the city with ample opportunities for consultation when he is in deep water. In this way there are often developed in the country such men as we do not often see in the city.

If in selecting the profession in which you this day graduate, you have looked at what is the true end of knowledge and work,—to relieve the suffering and to minister to the comfort of man's estate, to lessen the sum of human sorrow on earth,—you have chosen a profession which yields the fullest satisfaction to your aim and the highest scope to your work. You have, during the last four years, been learning in order to act, the end of all knowledge being action and the end of all action ought to be to promote the welfare and progress of mankind upon earth. In no profession are the opportunities for doing this good work so great and constant as in ours. To the least of us as to the greatest, occasions of tender sympathy and patient help occur every hour in the daily routine of our work; and no profession therefore rests so little for appreciation upon any adventitious circumstance of time or place, or so little needs extraneous titles of honor to give it dignity and respect. Put a doctor in the midst of the wildest savages and they will respect the medicine-man, when the lawyer's fluent sophistry and the preacher's pathetic eloquence may not gain them consideration, or save them from death. Associations which send missionaries to the heathen constantly recognise this fact. Protected by his medical skill David Livingston passed unharmed and esteemed among the savage tribes of Africa.

To-day, gentlemen, you enrol in the great band of workers of our profession at a time when the position of medicine in the estimation of the race, and when its capacities for the prevention of disease, the saving of life and the relief of human suffering, are far in advance of what they ever have been,—far in advance of what they were even twenty years ago.

There are many important functions to perform and positions you will be called on to fill, other than those of a strictly professional capacity. The family physician is, now-a-days, often the most trusted counsellor and adviser. He occupies the same position as did the priest of old. Hence, without doubt, he has vast influence for good, but also

possibly for evil, if not properly exercised. Perhaps this is going too far. At all events it is safe to say that the field is divided between the clergyman and the physician.

You will thus be called upon in season and out of season to advise families and individuals. Your ability to do this well must depend, not only upon strictly professional attainments but upon the position you have acquired in the confidence of your patients, and this will depend largely upon general culture,—a knowledge of men and things rightly used. Apart from the function of adviser and counsellor in matters other than medical, the family doctor exercises a great influence upon the morals and manners of his patients. Your conduct and deportment should be that of educated gentlemen, tidy and cleanly in person, in manners a pattern. You must remember that to many families and individuals, you will be the only person except the clergyman who has an opportunity to exercise such an influence.

In your relations towards your patients you must preserve a judicious reticence. Your patients have a perfect right to demand of you that you shall keep sacred, facts concerning them learnt by you in a professional capacity. There is, as you have doubtless learnt, only one exception to this rule, and that is when you are called upon to give evidence in a court of justice.

While thus keeping before you the high ideals which ought to govern your conduct and course of action toward your patients and the community generally, you must not suppose that you will escape much discouragement, ingratitude and misrepresentation. If your sensibilities are keen, and those of the young doctor are apt to be so, many darts and pin-pricks will fall to your lot. Some of those will be real, but many will be fancied on your part. Beware of taking heed to the gossip of small minds in the community in which your lot is cast. Our profession is by no means free from this class of mind, and there is nothing some persons in every community so much enjoy as to set the village doctors by the ears, to disturb the cordial feeling which ought to exist between you and your professional brothers. You cannot afford to be isolated. The occasions will be many when you need each other's help, sympathy and counsel. While in the conscientious exercise of the best you can give to your patients, you will have much in the way of appreciation and gratitude, but I have already told you that you must also be prepared for much misrepresentation and ingratitude. We doctors get much praise when we little deserve it, and much blame when we as little deserve it—we must be content with an average.

You will be early impressed by the immense gullibility of human beings, of their capacity for being humbugged. When old Thomas

Carlyle said that the then thirty millions of population of the British Islands were mostly fools, he made one of his strong statements, but one which contained a considerable measure of truth. It may be safely assumed that the British Islands have no monopoly of gullible human beings.

An important function of modern medicine—if not the most important, certainly one steadily growing as we make progress—the prevention of disease. You will, I hope, pardon a brief allusion to certain instances in which you may do much to prevent disease. You all know that there seems ample evidence to show that insanity is on the increase. The strenuousness of modern life must in the main be held accountable. You also know equally well that in scarcely any other disease does hereditary taint play so important a part in causation. The marriage of persons with such tendencies is therefore a most serious question. You will not always, probably not often, be asked for your advice on such points, but it will be your duty to speak with no uncertain sound, and to give it with all the necessary tact and authority. It will be often without avail. In these matters few persons are disposed to look to anything beyond their immediate gratification. If we were to say to two persons passionately in love with each other, that they may beget children, one of whom would certainly die prematurely of consumption, another become insane, and a third perhaps commit suicide, I am afraid that in three cases out of four, they would not practice self-denial and prevent so great calamities, but rather self-gratification and trust the universal plan will all protect.

You are doubtless aware of the intimate relation between the spread and prevalence of typhoid fever, cholera, diphtheria and other diseases, and the water supply of households and communities; and it is in the case of small towns and villages, rather than large cities, that such modes of diffusion especially obtain. Pardon me if I draw your attention to one of the most remarkable instances ever recorded—the outbreak of typhoid fever in the town of Plymouth, Mass., some years ago. In that town of eight thousand inhabitants, one imported case of the disease, by contamination of the water supply, led to the infection of no less than one-eighth of the whole population. One thousand cases of such a disease as typhoid fever, with, let us say, a mortality of eight or ten per cent.—try if you can to imagine such a calamity. Now it is from our profession surely, if any, that the influence with local authorities, families and individuals, needful to avert such disasters, must come. Here then, is an important field in which the young practitioner may do a vast amount of good to the community in which he lives, and to his own reputation. I will only, further, in this con-



nection, draw your attention to the necessity for your looking to the sanitary condition of dwellings as affecting the health of their inmates. The women and children of the community you live in will constitute a large majority of your patients, and this not only because they are more numerous, but because also they live more indoors and are much more susceptible to disease-producing influences than the adult males. On all such matters you will find a vast amount of ignorance and apathy on the part of husbands and fathers, frequently baffling, with sadness it must be admitted, the best directed efforts to counteract them.

I take it that the great object of the largest number of you is to obtain practice, to get patients, and this requires time. No clientèle well worth having, can be suddenly obtained. A practice quickly acquired is liable to be as quickly lost; you will therefore doubtless have to wait. Do not be deluded by instances you may hear of in which by some lucky chance a man suddenly works his way to fame and fortune. The celebrated English physician, Dr. Arbuthnot, is said to have suddenly become a fashionable doctor by his happening to be at Epsom when the carriage of the Prince of Orange was upset. There is doubtless a small amount of truth in this and similar instances. For the most of you it will be but a waste of time to sit behind a brass doorplate all day long doing nothing, or even drive about in a carriage with no patients to visit. All such expedients, sometimes resorted to, generally fail. You must wait, actively working while you wait. The exact form of work I cannot prescribe, but it may be at home, in a dispensary, a hospital or a medical school. You must also make your labors known, by medical societies, by journals or by separate publication, and be prepared to have been criticised and perhaps condemned; and it is well for all of us that our work should be criticised. If there is no medical society in your town or district one of the first things for you to do is to try and found one.

While waiting for practice and always throughout your medical career, you must read in order to keep pace with the progress of medical knowledge. It is after all but a small part that each of us can contribute to medical knowledge, but the sum of the contributions of many workers amounts to much. You must therefore acquaint yourselves with the work of others by reading books and monographs, but especially medical journals. But the periodical literature of medicine is exceedingly copious and sometimes of such a character as to more than justify the suspicion that the existence of it is rather for the necessities of the editors and writers than the hoped-for readers. You must therefore select for this and for another reason—for many of you money to subscribe will fail if time to read do not. But pardon me if I say that a single useful hint well repays the annual subscrip-



tion to a medical journal. I make no apology for attempting to guide your choice by advising you to take, first, the Montreal Medical Journal, the organ of your Alma Mater—a journal of which those who conduct it believe they have just reason to be proud. Then you must take and read the London Lancet and the British Medical Journal. The great ability and the high professional tone of their leading articles and the discrimination shewn in the choice of other matter, give them a position unequalled in medical journalism. The medical man who for ten years faithfully reads these journals must inevitably be a better man than his neighbour who systematically neglects them. Of American Journals, the Medical Record, the Medical News and the Philadelphia Medical Journal, may be selected. These will cost you about twenty-five dollars a year. But to all of you who aspire to a position at all above the rank and file, who are not content with the bottom rounds of the ladder, where throngs the crowd, I would say you must not be content with the medical literature of your mother tongue, you must know French and German, and if you have not hitherto acquired them, I would begin now when for a year or two most of you will have plenty of spare time on your hands. As soon as you can you must get to the old world to visit the justly renowned clinics and hospitals of England, France and Germany.

It has been said by some that to get on in medicine capital is necessary. If by capital money is meant, then I say it is not essential. Some of the most successful men have had no money to begin with. In fact, if you have money to invest, there are many ways to get a better material return than medicine. The capital essential to success is brains and industry, and it may be a comfort to many of you to know that these will suffice. No doubt a little money will sometimes greatly assist, but just as often it enervates or paralyses. In the study and practice of medicine your tastes and objects are doubtless varied, but the great majority of you must of necessity be general practitioners. In these days of prolific specialism, some of you may aspire to special work thinking it easy and remunerative. Well, it may be remunerative in a few instances of marked success, but that it is ever easy when successful, I deny: I would further say to those of you who aspire to special practice that if you are to be either safe or successful specialists you must first have a wide knowledge and experience of general medicine and surgery. Success in special practice depends largely on having acquired the confidence of the profession of the community in which you live, and this you cannot get without attainments which entitle you to it.

We have special congratulations for those of you who have attained to honours and prizes. They are the fruit of honest hard work, and we

are pleased to know that the class as a whole approves. I beseech you however to avoid making improper use of them. A short time ago I was shewn a country newspaper from the western part of Ontario containing a professional card which read as follows:—"Dr....., Graduate in Medicine and Gold Medallist of McGill University." It is true that the card stated facts, and while to laymen it may seem pardonable or even justifiable to thus publicly make known academic success, from the point of view of high professional tone it must be deplored and condemned. So are all newspaper notices of medical men in connection with operations, accidents and the like. I have lived long enough in this City to watch the careers of several men whose names were constantly for a time in the newspapers. None of them have attained to any enviable position, and most of them have utterly failed.

It must, however, be admitted that in these days of the ubiquitous reporter, the medical man is not always responsible for the appearance of his name in the newspaper.

I believe I cannot better indicate the spirit by which we should be animated in practising this profession of ours than by quoting to you the following words of an eminent surgeon:—"Our manners should ever be but the expression of the habitual frame of our mind; and the habit and temper of mind which should animate us in our ministrations to the sick, I can in no way so well indicate as by paraphrasing the words which so expressly tell us of the Divine Physician's tender care and true sympathy for us in our soul's sicknesses, namely, we must be touched with a feeling of their infirmities. The refining and elevating influence of such true sympathy will keep us from ever making our noble office subservient to any ignoble end; and though it may interfere with our becoming rich, yet it will raise us into a higher and purer atmosphere above the petty vexations and disappointments of professional life. For what if by our work, we become neither rich in worldly wealth nor great in the world's esteem? Surely a good name is rather to be chosen than great riches and loving favor rather than silver and gold. And though we may achieve no social distinction, we may by the Divine help, one day find, as many have found who are now gone to their rest, that the conscientious discharge of our duty in that profession which brought us neither wealth nor rank has been to us none other than the House of God, aye, and the very Gate of Heaven."

Again, wishing you a full measure of success, and assuring you of our continued watchful interest in your future career, I bid you for my colleagues and myself—Farewell!

## MUSEUM NOTES.

(Notes on Specimens of Interest and upon Work done in the Pathologica Museum, McGill University.)

BY

MAUDE E. ABBOTT, B.A., M.D., Assistant Curator.

### UNIQUE CASE OF CONGENITAL MALFORMATION OF THE HEART?

*Defect of the Interventricular Septum; Rudimentary Right Ventricle; Patent Foramen Ovale; Great Dilatation of Right Auricle and Right Auricular Appendix.*

From a Case Reported by A. F. Holmes, M.D., Montreal, Lower Canada, in the *Transactions of the Medico-Chirurgical Society of Edinburgh*, 1824.

This specimen which presents a condition of great pathological rarity as well as of clinical significance, is also most interesting to Montrealers and to those at McGill from a historical point of view. For the name of Dr. Andrew Holmes is well-known to most of us as that of one of the four medical men who, in 1824, initiated courses of lectures for medical students in this City, which, in 1828, became incorporated as the Medical Faculty of McGill University. The incorporation of the already fully organised medical school, securing to the College the bequest of its Founder.\*

Dr. Holmes was also one of the pioneer founders of the Montreal General Hospital and was connected with that institution from his 26th year until his death in 1860. He with others founded the Natural History Society of Montreal, and was its first President.

Alfred Sandham, writing of the Holmes' Gold Medal in 1872, speaks as follows:—"The medal was founded by the Faculty of Medicine in 1864 in honor of the late Dean, Professor Holmes, than whom, it may be said, that no man ever lived more conscientiously and few have died more beloved. It is a most deserving and grateful tribute to the memory of departed worth, associated as it is with the name of one who was the Founder of the first medical school in Canada, and who for nearly forty years remained in connection therewith."

Dr. Holmes is said to have been a detailed and conscientious rather than a brilliant lecturer and he was an indefatigable student. The

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\* The bequest of the Hon. James McGill was to take effect on condition that there should be erected within ten years on the estate of Burnside "A university or college for the purpose of education and the advancement of learning in this Province with a competent number of professors and teachers to render such establishment effectual and useful for the purpose intended."



scattered papers from his pen which I have been able to examine from the journals of the time, give evidence of this; they show deep research and a widespread interest extending far beyond the subject with which he deals. Indeed, he seems to have been a man of high scientific gifts, who left his mark upon his time in many directions. He was above all things a collector, was a botanist, mineralogist and geologist, and left behind him a valuable herbarium and collections of minerals which still form important parts of the Redpath Museum, and the Natural History Society Collections. In the Redpath Museum these formed part of the first nucleus of what is now one of the richest parts of the University. I find a note by the late Sir William Dawson, dated 1862, as follows:—

“The new Museum contains a general collection of Zoology, a general collection of Geology and Palæontology, the *Holmes' Collection of 2,000 Canadian & Foreign minerals*, the *Holmes' Herbarium, containing specimens of nearly all the plants indigenous to Lower Canada*; the Logan collection of 450 characteristic Canadian fossils, and the Cooper collection of 2,400 Canadian insects.”

In the Redpath Museum his mineralogical collection is not preserved as a whole, but the specimens are scattered, classified among others for teaching purposes. All are named however “Holmes' Collection” and carry the original label, a small yellow paper bearing the catalogue number Dr. Holmes gave them, written by himself. An extremely interesting catalogue for these specimens can be seen in the Museum. It is entirely in his own writing. It shows his wide knowledge of mineralogy and states the source and date at which the specimens were obtained.

The herbarium here is almost more interesting to us, for, from a catalogue edited by Professor James Barnston in 1854, but made out by Professor Holmes himself, the specimens all are seen to be from the immediate vicinity of Montreal, collected from 1821 to 1825 and representing in over 500 specimens almost the entire flora of this district. This collection is not scattered among others but is preserved intact as the *Holmes' Herbarium*.

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Dr. Holmes graduated from the University of Edinburgh, in 1819, and the case before us was reported before the Edinburgh Medico-Chirurgical Society in 1823, when he was a young man of 26 and before he could have been four years in practice. Knowing his future it is very interesting to read this, which was probably his first paper of importance. On this ground I trust that the above apparent



digression from the pathological specimen forming the subject of this paper, will be pardoned.

This specimen had stood upon the shelves of the Pathological Museum for many years without a reference and its interesting history seemed to have passed beyond the ken of the present generation. Dr. Osler, however, in reply to an enquiry on the subject, stated that he remembered it perfectly, having often demonstrated it, and directed me to the *Edinburgh Medical Journal* in which he told me it had been reported by Dr. Holmes.

I take the liberty of republishing Dr. Holmes' article in toto, both because in itself it presents many points of interest to us of modern times and because it is so classically written that scarcely a word can be omitted without loss.

### CASE OF MALFORMATION OF THE HEART.\*

BY

A. F. HOLMES, M.D., Montreal, Lower Canada.

Communicated to the Medico-Chirurgical Society of Edinburgh, by Dr. Alison,  
March 5th, 1823.

The following case of malformation of the heart, is, I believe unique, as far as the appearances extend, though several, in which similar effects on the circulation must have been produced, are to be found recorded. Many of the cases collected by Dr. Farre in his *Essay on Malformations of the Heart*, resemble this in one or more particulars, but no one exactly. Though, from the existence of all the parts that are found in the natural state, it might be classed among cases of imperfect double heart, yet it may perhaps be more correctly considered intermediate between them and those of single heart, as from the relations and small capacity of the right ventricle, it can be looked upon only as the commencement of the pulmonary artery. The effects on the constitution of the blood would evidently be the same as if only one auricle and ventricle existed.

Isaac N., æt. 22, of a delicate habit, had been affected from infancy with a palpitation of the heart, attended by a peculiar blueness of the cheeks and lips, more remarkable at one time than another. The palpitation was much increased by quick motion, and subject to aggravation after any irregularity, which a turn for dissipation frequently presented. At these times the difficulty of respiration was great, and attended by pain in the region of the heart. For a few years past he had had a more severe attack every winter, apparently originating in

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\* Republished from the *Trans. Medico-Chir. Society of Edinburgh*, 1824.

intemperance, commencing with bilious vomiting and yielding to blood-letting, cathartics and antispasmodics. Less severe attacks occurred more frequently, in most of which abstraction of blood seemed of advantage. That which terminated his existence commenced on the 13th of January by vomiting, which continued for nearly 24 hours, greatly anxiety and oppression and violent pain about the precordia. He was unable to lie except in one position, on his back, inclining to the left side. Any attempt to lie on his right side was followed by a sense of pain and suffocation, which obliged him to change his posture. This inability of remaining on the right side was present even in health; and if, by accident, he turned during sleep, he was awakened by acute pain.

To relieve the urgency of the symptoms, blood was abstracted on the 14th. On the 15th and 18th a blister was applied to the chest and opiates, in combination with salines and antispasmodics, were employed with but trifling relief. The tongue being much furred and skin hot, cathartics were used. These remedies were continued throughout the disease.

During its continuance it more than once appeared to yield, the patient getting comfortable sleep, and being free from pain, and the palpitation less annoying. The tongue became clean, but again furred towards the close; yellowness of the eyes and skin, and high colored urine, were more or less present during the progress of the complaint. Some time before his death, the feet began to swell, the œdema increased gradually, and was soon followed by fluctuation in the abdomen, and effusion in the chest. The presence of fluid in the pericardium was suspected from the patient being easy only while inclining forward, a symptom which appeared a few days before death, but became less prominent afterwards. At the same time a peculiar sound was occasionally heard, particularly when the ear was made to approach his breast, similar to that produced by bubbles of air entering a bottle full of water and frequent inclination to syncope, commonly induced by attempts to move, supervened.

The little probability of being of service, confined the practice in the latter part of the treatment to stimulants and anodynes, except that, in consequence of enlargement of the liver being perceived, submuriate of mercury was conjoined. No specific effect followed its exhibition, but it appeared useful by acting on the bowels. Three days previous to the termination of the case, cough came on, attended by expectoration of mucus, at first mixed with blood.

On the 8th of February, he was evidently sinking; the palpitation constant, countenance very anxious and mind depressed, much oppres-

sion, respiration short; incapacity of raising the mucus from the trachea. He died early next morning.

The pulse throughout the disease was generally very irregular; sometimes intermitting, then full and bounding, followed by a tremulous motion of the artery; at other times it was regular but small. At the beginning of the disorder the pulse was at the wrist imperceptible, and continued so, with cold extremities, for several days. It was observed, that the arterial dilatations were occasionally not synchronous with the contraction of the heart, the latter having several pulsations in the interval of those of the artery without any regularity.

A remarkable circumstance attending the case was the apparent convalescence. On the 31st every symptom was aggravated, the effusion gaining ground, and there appeared little probability of his surviving many hours. To our surprise, however, on the first he was considerably relieved, and continued to improve; the œdema and swelling of the abdomen became stationary, and for three or four days there appeared a prospect of his recovery. This proved fallacious; the urine became scanty and high colored; the thighs, penis, and left arm œdematous and his abdomen larger. He suffered less, however, than at the commencement.

The body was examined in the presence of Messrs. Arnoldi, Caldwell, and Robertson, the two former of whom attended the case with me.

SECTIO CADAVERIS:—In examining the body externally, the lower extremities, parts of generation, and lower part of the abdomen, were considerably swelled from effusion into the cellular membrane. On opening the abdominal cavity fluid of an orange color was collected, amounting to nearly a quart. The liver presented itself enlarged and hardened. The hardness was general, and extended through its substance, which, when cut into, appeared mottled with yellowish specks. The pyloric extremity of the stomach was lower than usual. A few of the glands at the root of the mesentery enlarged and hard; intestines healthy. Both sides of the thorax contained fluid, but not to a large amount. The pericardium occupied almost entirely the left cavity, the lungs being pressed into the upper and back parts; they were healthy except in containing fluid effused in their substance. Upon slitting up the pericardium, which contained from 3 to 4 ounces of serum, the heart came into view, generally enlarged, particularly the right auricle, the size of which was increased to the capacity of a pint.

When opened and cleared of the blood with which it was filled the musculæ pectinatæ appeared remarkably strong. The interior rough and hard, apparently from earthy deposition, and giving a gritty feel when the knife was passed over it. The foramen ovale was pervious,



admitting easily the handle of the scalpel or the little finger. The aorta was then opened, and the section continued down into the ventricle. Its coats here and there were marked with yellow spots; the corpuscula Morgagni and two of the semilunar valves were red and increased in size. The parietes of the left ventricle were thinner than usual, and the cavity much larger than natural. Passing the finger into what appeared the opening between this ventricle and the left auricle, it passed by a large opening into the right auricle; and it was then found that there was no communication between the right auricle and left ventricle. The right ventricle was much less than natural. The pulmonary artery, of its natural size, passed from its upper end; the blood had found ingress into this ventricle from the left ventricle through an opening with tendinous margins, just below the semilunar valves of the aorta. Its size about half an inch by three-fourths of an inch. The praeternatural orifice between the right auricle and left ventricle was large, and furnished with valves similar to the tricuspid. Part of these were thickened and of a cartilaginous hardness. At the base of one of the divisions, there was a tumour of the size of a bean, containing a thickish yellow matter. The left auricle was partly concealed by the columnæ carneæ, and their tendinous terminations affixed to the valves just mentioned, and was a little enlarged but natural, as were the veins flowing into it.

The course of the circulation in this curious case must have been as follows:—The blood entering the right auricle by the two cavæ, passed almost entirely into the left ventricle, a small portion probably finding its way into the left auricle. A part of the blood would pass during the diastole of the ventricles from the left into the right ventricle, and be propelled through the lungs, to be returned into the left auricle. The blood itself would constantly remain in a state very little oxygenated, as the portion returning from the lungs would be mixed with the returned venous part, before being propelled into the aorta.

The accompanying sketch (Plate 1) may serve to explain the appearances:—

- (a) The pericardium held up by pins.
- (b) Part of internal surface of aorta with orifice of one of the coronary arteries.
- (c) The left auricle.
- (d) The left ventricle, crossed by a probe placed under the columnæ carneæ and cordæ tendineæ.
- (e) A part of the right ventricle, with the sides separated by a piece of whalebone.



- (f) The remaining part of the right ventricle. To this portion the pulmonary artery remained attached.
- (g) A probe passed through the oval opening between the two ventricles.
- (h) The passage from the left ventricle into the right auricle which was as large as the left auricular orifice.
- (k) The parieties of the left ventricle.

In the clinical history given interesting points are,—the relatively slight cyanosis that seems to have existed; it is spoken of only as “a peculiar blueness of the cheeks and lips, more remarkable at one time than another;” and the fact that the patient attained the age of 22 years in fairly good health and with apparently active habits. I find however a fair number of cases recorded of cor triloculare where patients have lived to a fairly advanced age.

Professor Ewald of Berlin<sup>1</sup> gives a case of cor triloculare biventriculare where the patient died at the age of 42 years.

Max Mann<sup>2</sup> gives a case of cor triloculare *biatriatum* dying at 22 years from a glioma of the brain, a quite independent affection.

In this report it is also very interesting to compare the keen observation which Dr. Holmes brought to bear on all the details of his case (noting fluctuation, signs, of effusion, pulse, bubbling in the chest, etc.), his close connotation of the sequence of events, his skilled post mortem technique, with an entire absence of those methods of physical examination which it would seem to us in the light of our present day knowledge almost must suggest themselves to one who was studying his case so closely. But in matters even of the purest observation suggestion seems needed to lead the way. In this connection Dr. Holmes' own words, spoken some 25 years later, in his *Valedictory address to the students of the medical faculty of McGill University* in 1851, are very striking. He says:—It is rather humiliating to look back into the history of medicine and to see the neglect of great discoveries and frequently the opposition to the introduction of great improvements. The case of Inoculation and more recently of Vaccination, may serve to show the one and the long neglect of Percussion as a means of diagnosis of diseases of the heart, the other. It was about the middle of last century that Auenbrugger published his important discovery and it was not till it was recommended by Corvisart many years after the present had commenced (in 1808) that its value became generally known.....

\* \* \* \* \*

...I shall only finally allude to the vast improvement introduced

into practical medicine by the conjoined operations of auscultation and percussion. It is now about 30 years since Laennec first announced his great discovery to the French Academy and it is much less since the practice of auscultation became general. Like most improvements it met with opposition at its first introduction; but this has now quite disappeared and its only obstacle is that which it shares with all other objects of pursuit, the labor necessary for acquiring expertness in its application."

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The heart as it appears to us to-day as a museum specimen presents the following appearances:—

An adult heart of medium size, broad at the base and somewhat shorter than normal from the auricular-ventricular groove downward. The apex is blunt and rounded; the auricles have been opened in the usual way and show no anomalies of the entering veins. The right auricle is largely dilated and somewhat hypertrophied and there is a slit-like opening of the foramen ovale. The ventricular portion has been opened by an incision on its anterior surface through the aorta to the apex. This reveals a large roomy cavity occupying the whole inferior part of the heart and a small triangular cavity situated at the right upper angle of the larger cavity and in front of the aorta.

The larger cavity, which is called by Dr. Holmes 'the left ventricle', has four openings: (1) the tricuspid, communicating with the right auricle, guarded by the tricuspid valve (and described by Dr. Holmes as "the preternatural orifice between the left ventricle and right auricle, furnished with valves similar to the tricuspid.") (2) The mitral communicating with the left auricle and guarded by the mitral valve. (3) The aorta which rises behind and posteriorly in the median line. It is normal in direction and position but of slightly diminished calibre. (4) A diamond shaped opening with tendinous edges, not valvular in character, just below and to the right of the aortic valves and above the tricuspid, which leads into the smaller triangular cavity situated at the right upper anterior angle of the heart.

The only sign in the larger chamber of an interventricular septum, separating the venous from the arterial heart, is a small muscular cushion at the extreme upper part of its posterior wall which projects forward less than half an inch between the tricuspid and mitral valves which lie on either side of it.

The walls of this ventricle are about half an inch thick and the papillary muscles are very strong, especially on the left side.

The small triangular cavity situated above and to the right is called

by Dr. Holmes 'the right ventricle;' it has two openings: (1) it gives off the pulmonary artery; (2) and it communicates with the left ventricle by the diamond shaped opening which has been described above. The two cavities are separated from each other by a muscular septum over a quarter of an inch thick, which is perforated by the diamond-shaped opening at its inner end.

The *pulmonary artery* is of good size and slightly larger than the aorta in front of which it crosses from right to left; it *shows no sign of disease*.

At first sight this smaller cavity appears like a pouch in the wall of the ventricle, or the conus arteriosus of the pulmonary artery cut off from the right side of the main body of the common ventricle. And the anomaly before us might be considered to be two-fold:—(1) a total defect of the interventricular septum producing a cor batrium triloculare, a fairly common congenital anomaly. (2) A supernumerary ventricle, produced by the cutting off of the conus arteriosus of the pulmonary artery by an anomalous septum such as was described by Dr. Stephen Mackenzie in speaking of a heart with three ventricles as "An exaggeration of the folds of the muscular columns to which the tricuspid valves are attached."\*

Considering the matter, however, from an embryological standpoint a simpler explanation of the facts seems to suit the case better. It is one which seems to have suggested itself to Dr. Holmes also, judging by his nomenclature. For he calls the large chamber receiving venous and arterial blood from both auricles, the *left* (and not a common ventricle) and the small chamber, giving off the pulmonary and having no communication with the auricles, the *right* (and not a supernumerary) ventricle.

The interventricular septum it will be remembered is developed in early foetal life from three directions, the *septum inferius*, which grows up from the posterior wall near the apex; the *septum intermedium*, which is a prolongation downward and forward of the *interauricular septum*; and the *septum superius*, a continuation downward of the aortic septum, which forming within the aortic bulb has divided the aorta from the pulmonary artery. The septa thus derived from below, above and posteriorly, unite to form the interventricular septum not far from its upper border. The point of union remains the weakest part of this septum throughout life and is known in the adult heart as the *pars membranacea* or "*undefended space*."

In our specimen the *aortic septum* has fully developed, the aorta and

pulmonary arteries being in their normal relations, and perfectly formed. The aorta is moreover shut off from the chamber giving off the pulmonary by a fully developed muscular wall. The *septum intermedium* is apparently represented by the small muscular cushion projecting forward into the ventricle between the mitral and tricuspid valves.

Let us suppose that at a very early period of foetal life the *aortic septum* had been continued downwards either to meet the *septum inferius*, or, that being defective, to meet the opposite ventricular wall, while the *septum intermedium* failed to close in and complete the division of the cavity. There would have thus resulted a chamber giving off the pulmonary partially cut off from a chamber giving off the aorta and also receiving blood from both the auricles. This latter chamber, which may be considered (in Dr. Holmes' own words), the left ventricle, having thus a great excess of work to do, would have grown much more rapidly than the other. And the wall cutting off the small cavity containing the pulmonary artery would, in the subsequent growth of the heart, have been carried round to the side of the greatly enlarged left ventricle and out of all relation to the *septum intermedium* between the mitral and tricuspid valves. And exactly the appearances seen here would have been produced.

Three plates accompany this paper:

Plate I. is a reproduction of a fine copper-plate engraving published by Dr. Holmes with his paper in the *Trans. of the Edinburgh Med. Chir. Soc.*, 1824, and apparently taken from a drawing made at the time. The lettering is his own and is explained at the end of his text.

Plate IIa and Plate IIb represent two photographs kindly taken by Dr. Patrick of the heart as a museum specimen and show the interior of the two ventricles and the large arteries. Glass tubes project through the mitral and tricuspid orifices and through the diamond shaped opening between the ventricles.

Plate III. is a diagrammatic sketch of the heart to show the mixed course of the blood and the relation of its cavities. It will be seen that no chamber contains pure arterial blood, that entering the left auricle from the lungs meeting with a stream of venous blood through the foramen ovale. For this sketch I have to thank Dr. R. Tait Mackenzie.

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List of Dr. Holmes' writings accessible in the McGill Medical Library: Those papers which have seemed to me especially valuable I have underlined.



1. Case of Malformation of the Heart. Trans. of the Med. Chir. Soc. of Edinburgh, 1824.
2. *On Fleshy Tumours of the Uterus with Abscess of Ovarian, Rupture and Fatal Peritonitis.* British American Journ., 1845, Vol. 3, p. 87.
3. On Gunshot Wound of the Heart with Perforation of the Pericardium. Brit. Amer. Journ., 1846, Vol. 1, p. 227.
4. On Obstruction of the Appendix Vermiformis and on Post Mortem Appearances in Peritonitis. Brit. Amer. Journ., Vol. 2, p. 285.
5. Remarks on Dr. Nelson's Communication re the Champeau Case of Peritonitis. Montreal Medical Gazette, 1844, p. 199.
6. On the Employment of Chloroform, Brit. Amer. Journ., 1847-48. (Reporting a case where he claims chloroform was used for the first time in this Province.)
7. Valedictory Address to the Students of McGill Medical Faculty, 1851. Brit. Amer. Journ., Vol. 6, p. 51.
8. *Valedictory Address to Graduates in Medicine*, *ibid.*, 1854, p. 1.
9. Case of Heart Disease. Montreal Med. Chron., 1855, Vol. 2.
10. *Fatal Jaundice.* *ibid.*, Vol. 3, p. 281.

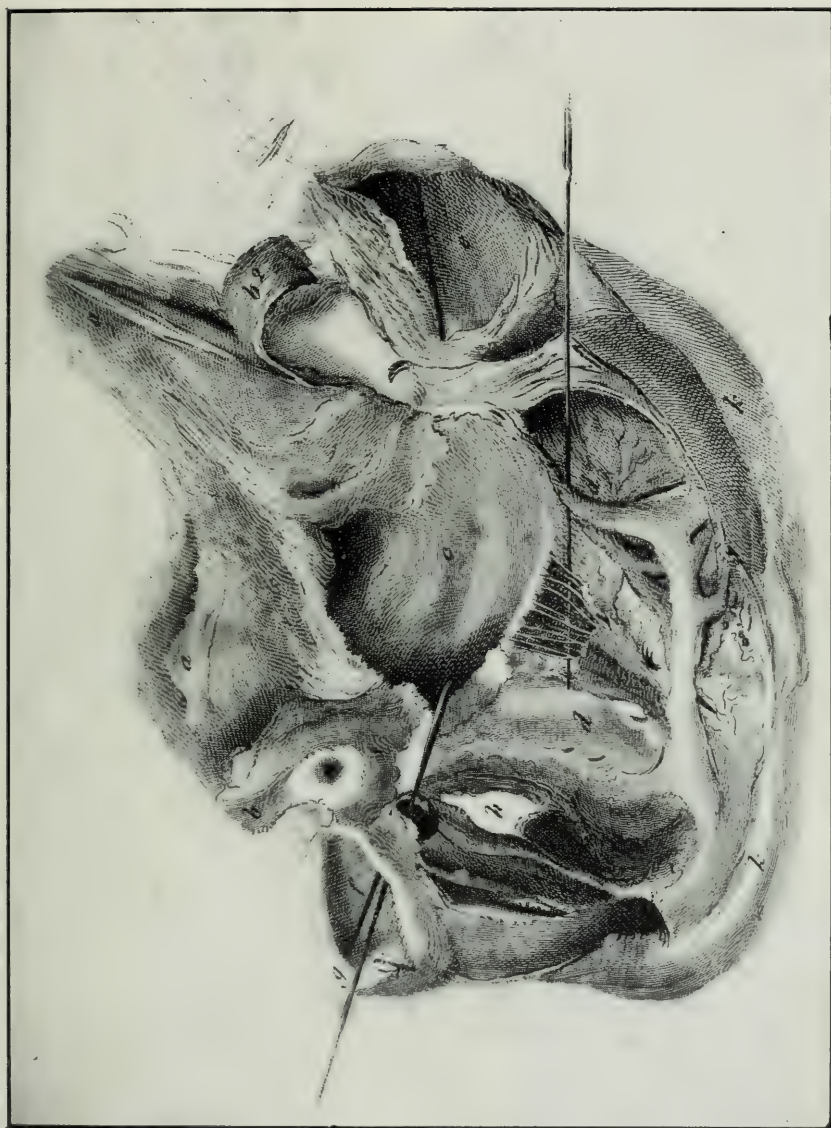


PLATE I.



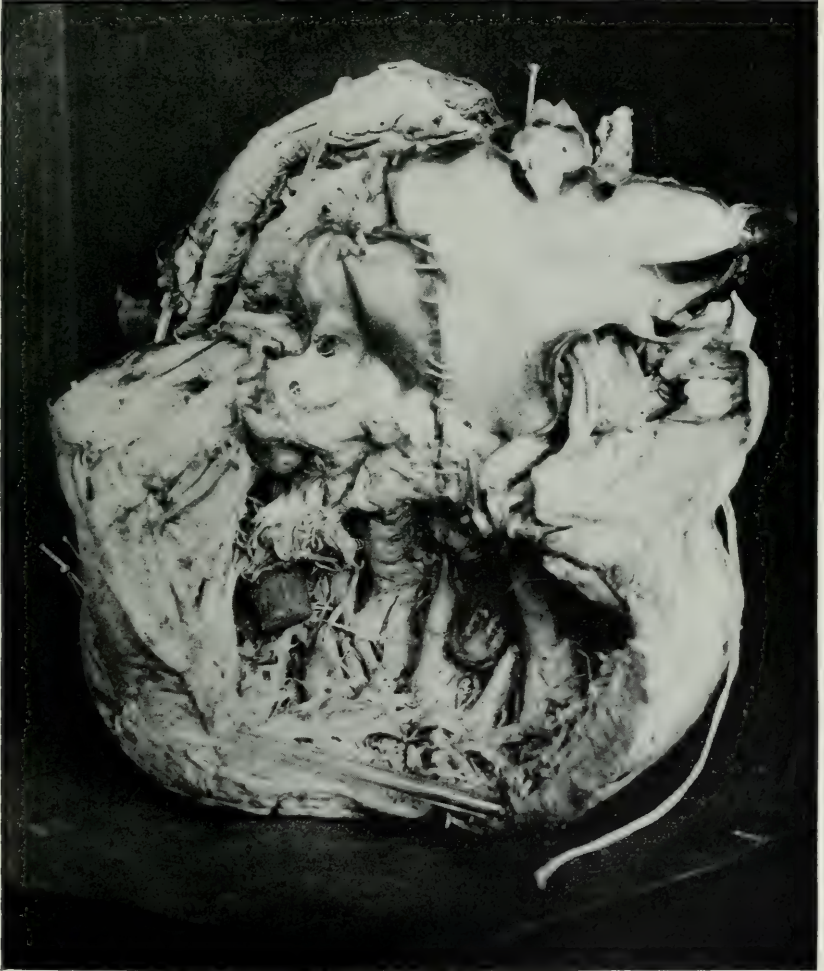


PLATE II<sub>a</sub>.





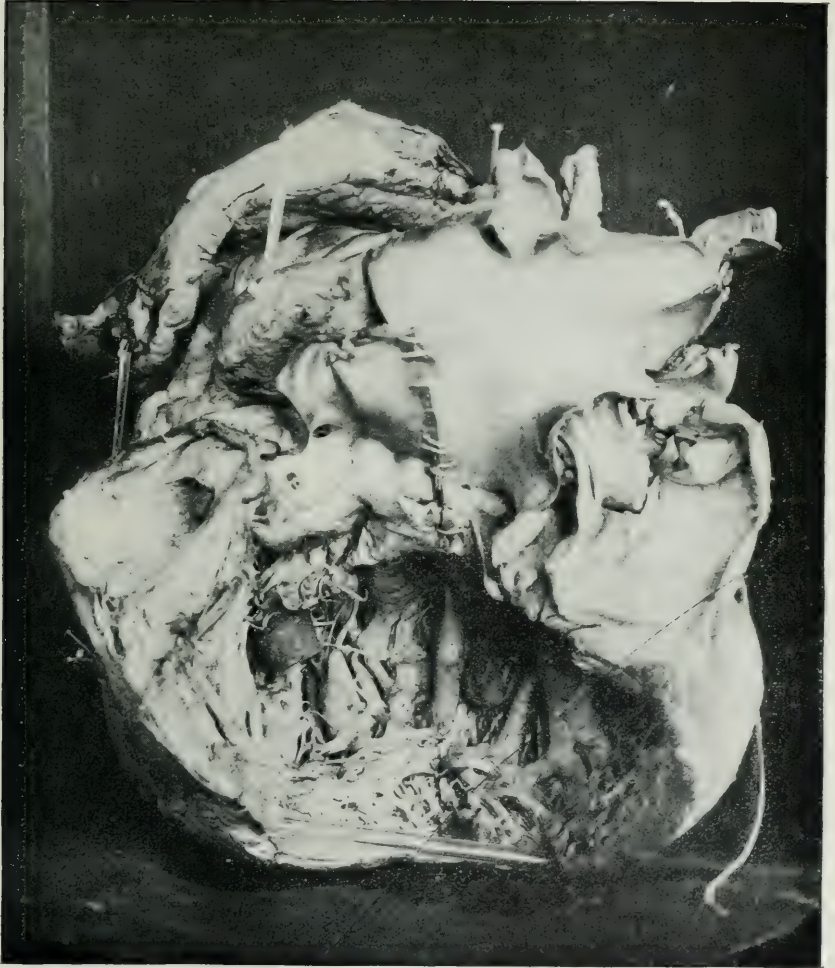


PLATE II B.



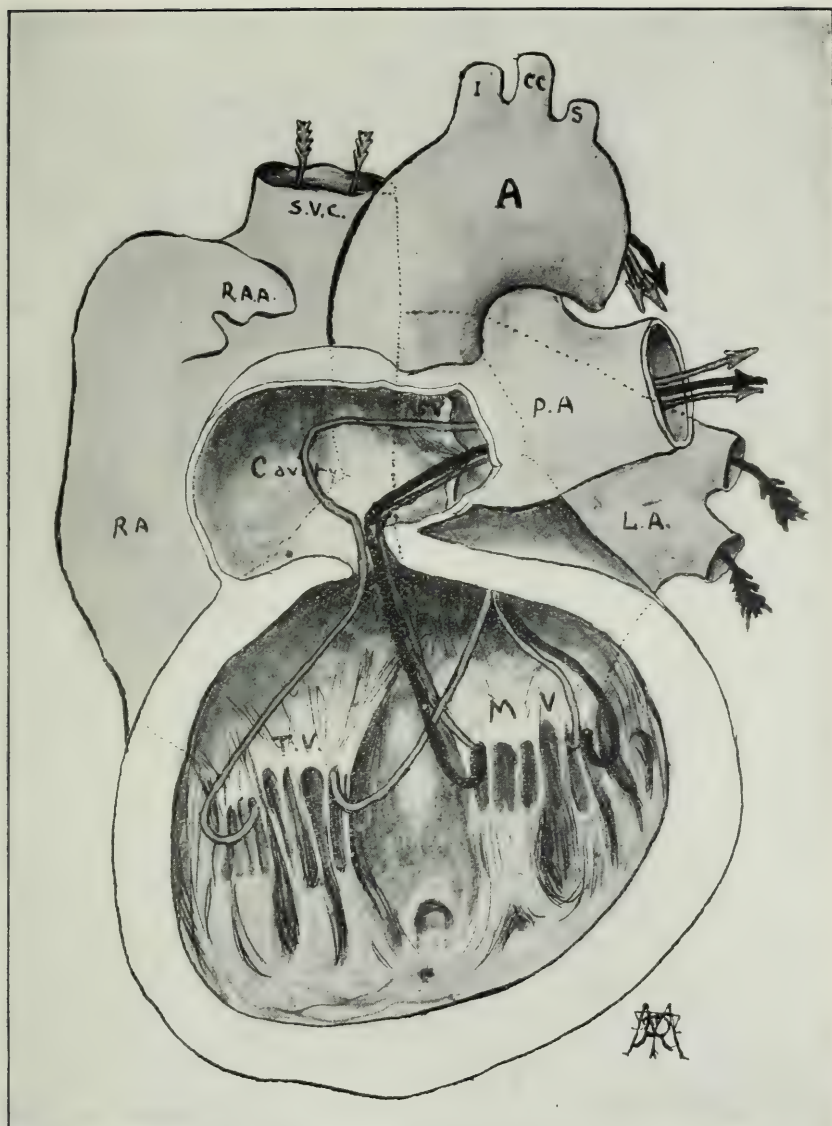


PLATE III.

Diagrammatic sketch by Dr. R. Tait Mackenzie, showing course of blood and relation of cavities. The pale line shows venous blood, the dark line arterial blood,





## ON THE ACUTE DILATATIONS OF THE HEART MET WITH DURING CHILDHOOD AND ADOLESCENCE.

BY

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All recognise readily dilatation associated with hypertrophy especially when it arises from valvular lesions easily detected by means of their accompanying endocardial murmurs. It is perhaps questionable whether we are sufficiently on the alert for symptoms of a weakened condition of the heart muscle associated with passive dilatation; nevertheless, the recognition of the existence of such a condition when present is of great importance. In the majority of instances acute dilatation would appear to be a consequence of some abnormal condition of the heart wall. Osler speaks of dilatation occurring as the result of either a weakened heart giving way under a normal strain, or a normal heart wall giving way under an increased amount of strain. Nevertheless, considering the relatively large amount of reserve force present in a normal heart, it must be admitted that a strain that breaks down the resistance of an efficiently nourished heart wall must be great indeed; and in most instances in which the cardiac muscle has given way in childhood some defect in its nutrition will be found to be an important predisposing factor.

Dilatation of the heart is most commonly met with at two periods of life: during adolescence, when the demands of the developing organism impose an increased strain upon the cardiac muscle, often defectively nourished by an impoverished blood; and again in the decadent period of life when degenerative or atrophic processes make their appearance in the heart muscle, either as a sequence to changes in the arterial walls, or as a result of some previous inflammatory condition. Of this second class, extremely important though they are, we do not propose to speak this evening, but will direct attention entirely to the dilatations which are liable to occur during early life and adolescence.

In this group the important predisposing factor is the very rapid development which takes place in the size of the heart at puberty. For the first three years of life the heart's growth is rapid and proportionate to that of the body. From the third to the tenth year it fails to maintain this relative weight; but from the eleventh to the fifteenth

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\* Read before the Montreal Medico-Chirurgical Society, June 7, 1901.

year growth is again extremely rapid (Holt). Pitt, (*Brit. Med. Journ.*, Nov. 27th, 1886) quotes Beneke who states that the annual increase in the size of the heart between seven years of age and the beginning of the development of puberty is about 8 per cent. annually of its weight, but during the changes which accompany puberty it increases from 80 per cent. to 100 per cent.

In the same paper Pitt says that it is easy to understand how with such immense developmental changes going on, the heart may prove functionally unequal to the strain which the active life of a rapidly developing boy or girl imposes. Cardiac dyspnœa in such may arise on slight provocation if the strain be further increased the heart wall may yield. Any such tendency is augmented by the existence of a second predisposing factor frequently present at this period of life, an anæmic and impoverished condition of the blood, due in many instance to faulty hygiene in home and school life.

Closely associated with this anæmia is the depressed condition of the nerve centres arising sometimes from imperfect nourishment, at other times due to over-excitement and a deficient amount of sleep, such a neurasthenic state may lead to marked impairment in the tone of both extra and intra-cardiac nerves.

Similar in some respects in its effect on the heart muscle to the foregoing is the condition of toxæmia which exists in almost all conditions of pyrexia and is specially present during an attack of one of the infectious fevers. Not only may such an attack be regarded in childhood as a predisposing factor but also as an actual exciting cause of cardiac dilatation; and many instances are recorded in which during the course of one of the more grave zymotic fevers the heart walls have become so seriously impaired both in nutrition and in nerve tone that they have yielded, sometimes quites suddenly before a slight extra demand made upon their activity. Such a yielding of the heart walls not infrequently takes place in the course of an attack of diphtheria; occasionally at a relatively early period but more frequently in the later stages of the disease; Lees (*Brit. Med. Journ.*, Jan. 5th, 1901), insists that after a severe attack it is necessary to keep a careful watch on the condition of a child's heart for at least two months. Acute dilatation, according to this writer, is frequently accompanied by vomiting, and this symptom is therefore regarded by him as an important danger signal, especially, if along with it, there is an increased pallor of the face and a feeble pulse. After the first shock has passed off the urgency of the symptoms may lessen; nevertheless a careful examination may reveal the signs of dilatation. Such patients are in imminent danger and demand most careful attention.

Forcheimer in an article in the Jacobi Festschrift has directed atten-

tion afresh to the occurrence of dilatation in influenza. Frequently the clinical symptoms pointing to such a condition come on early in the course of the illness and are apparently due more to the action of the poison on the nerve centres rather than directly upon the heart muscle. With this condition present the patient will be found lying in a somnolent condition with skin of mottled, deeply congested hue; the respirations hurried and pulse sometimes slow, more frequently feeble and rapid, and sometimes intermittent. A careful examination reveals no abnormal pulmonary sounds with the exception perhaps of a few large râles; the outline of the heart dulness, however, is broadened, and the tone of the first sound is impaired; the urine is normal. These symptoms may lessen greatly in their severity in from 48 to 72 hours, or more definite indications of weakness of the cardiac muscle may develop and assume an alarming character, especially if any pulmonary complication sets in. A distressing paroxysmal cough may sometimes do much to aggravate this condition. Minor degrees of cardiac dilatation may in some instances persist for many weeks after an attack of influenza is over, and call for watchfulness lest over-fatigue do serious and permanent injury.

The occurrence of dilatation in severe attacks of typhoid fever is a matter of common observation. The tendency to its development in scarlatina is greatly increased by the presence of any renal complication. Instances of such a condition are probably familiar to all. In rheumatic fever in children, acute dilatation is very liable to occur. Lees (*loc. cit.*) states that even in the most subacute attacks some acute dilatation of the heart is in his experience invariably present, but with the passing off of the rheumatic condition this dilatation lessens, and the heart muscle resumes its normal tone. That such dilatation may occur not infrequently will probably be admitted by all, but that it is invariably present repeated physical examinations by careful observers fail to verify. The following is an illustrative case which came into the wards of the Montreal General Hospital a few weeks ago.

H. E., æt. 14, entered the Hospital April 20th, 1901. His previous history was unimportant. On April 16th he had been taken ill with severe pain on the left side; and on the following day pain in the knees developed. He took to his bed complaining of weakness, pain and some dyspnœa.

The symptoms on entering the Hospital were as follows:—He was a fairly nourished lad, with lips and cheeks of slightly cyanotic hue. There was pain, redness and swelling over the joint of the right great toe, over the astragaloscaphoid articulation and in both knees. The pulse was small and feeble; the cardiac impulse was noted as in the nipple line and was feeble and diffuse; its vertical dulness commenced



at the upper border of third rib, and transverse dulness one and a quarter inches to right of middle line extending to the left as far as the nipple line. A soft systolic murmur was heard at the apex, the second pulmonary sound was accentuated, and a soft systolic murmur was also heard over the pulmonary cartilage.

Under treatment the rheumatic symptoms rapidly improved, and with absolute rest the transverse dulness of the heart diminished. On April 30th, it was noticed that the heart dulness began at the third space above and transversely at the right border of the sternum, extending to just inside the nipple line. On May 3rd the vertical dulness commenced at the 4th rib, the transverse at the middle of the sternum and extended to just within the nipple line. The systolic murmur at the apex was still present, the first sound was accentuated over the pulmonary. On May 18th, the area of cardiac dulness was almost normal.

An interesting fact, stated by Lees, is that although dilatation is far more common in rheumatism than in either influenza or diphtheria, it is far less dangerous. The difference is apparently due to a difference in the action of the several toxins on the cardiac muscle. Microscopical examination of sections through the muscle in a rheumatic and in a diphtheritic heart show much less destruction of the muscle fibres in the one than in the other (*British Medical Journal*, Jan. 5th, 1901, p. 9). Nevertheless it is to be emphasized that in this affection the condition of the heart wall as well as that of the valves demands the careful daily investigation of the attending physician.

Among the directly exciting causes of dilatation in youth we must undoubtedly place too severe or too prolonged exercise of all kinds, especially in running, wrestling, and swimming. This excess in exercise is, I am persuaded, liable to occur in school children if their games are not placed under the direction of a skilled instructor. Heart strain is especially liable to occur if severe contests are undertaken without previous training. Numerous instances are on record in which under such circumstances symptoms developed which pointed unmistakably to an acute dilatation having taken place. It is quite possible that such a dilatation may permanently impair the reserve force of the heart.

Collier (*Brit. Med. Journ.*, Feb. 16th, 1901,) in a paper on the results of severe muscular exertion in adolescence, states that at least two effects may be noticed; first, owing to the strain thrown upon the air vesicles a condition arises which has been termed physiological emphysema; and second, owing to the strain thrown upon the right side of the heart, over-distension of the right ventricle frequently

ensues; he adds that when we remember the enormous changes going on in the body of young adolescents and the coincident rapid growth of the heart, we are safe in assuming that at no time during what may be called the athletic period is the right side of the heart more liable to injury from over distension. The danger he considers a very real one and details several instances which came under his own observation. Not only is the right side of the heart liable to over distension but in almost all instances where lads have gone in enthusiastically for athletics, evidence of hypertrophy of the left ventricle will be present. The apex beat will be found lower and more to the left and its impulse will be strong and heaving in character. In explanation, Collier quotes Clifford Allbutt, who in a paper published nearly 30 years ago, showed that the great strain in severe muscular exercise fell on the aorta. In the earlier stages he says blood is thrown into the aorta with both increased force and increased frequency, distending it and necessitating as a consequence a greater propulsive force in the ventricle. This condition if prolonged or frequently renewed results in what has been termed physiological hypertrophy. In rapidly growing and poorly nourished adolescents such conditions may give rise to indications of distinct over-strain of the heart. As an instance of dilatation to which athletic exercises had certainly a noted share the following case may be cited:

In young girls the changes at puberty are more rapid than those in boys and are more frequently associated with anæmia and an atonic condition of the heart wall. In such generally, but especially in the class who act as domestic servants and who have a large amount of running up and down stairs to perform, symptoms of breathlessness on exertion with a disturbing amount of palpitation are easily induced, sometimes out of all proportion to the mere anæmia present. In the large number of these cases indications of a dilatation of a greater or less degree will on careful examination be found to be present.

In patients of this age, also, more frequently than in patients of more adult age, do we find dilatation as the result of those conditions which alter intra-cardiac pressure, and increase resistance to the out-flow of blood from the heart. Such conditions may be briefly referred to as, disturbances in the respiratory system, in the vascular system and in the urinary system.

It is not necessary in a paper like this to more than refer to the physical signs indicative of cardiac dilatation:—the feeble, diffuse cardiac impulse; the extension of the cardiac dulness always towards the left, sometimes towards the right; the feebleness of the first sound at the apex and its altered character, it is shorter and higher pitched; the accentuation, sometimes reduplication, of the pulmonary second

sound; the weak, sometimes slow, generally rapid pulse showing a tendency to irregularity and intermittency. Lees emphasizes another sign which would not have been anticipated, but which is usually present; a marked accentuation of the aortic second sound, even when the radial pulse is extremely feeble. This sign he attributes to tension of the aorta in his opinion by a contraction of the splanchnic arterioles due to the action of toxines. A more plausible explanation however is given by Nicholson (*Brit. Med. Journ.*, April 13th. ), who states that in extreme dilatation the arterial blood pressure must always be relatively high for the state of the heart and blood vessels, and the true value of this accentuation of the aortic second sound as a symptom, depends on its occurrence at a time when, to judge from collateral symptoms, one would least of all expect it. It may be regarded as an indication that the ventricle is straining every fibre and that the heart is arriving at a stage when no further response to stimulation is possible. If a little more work is suddenly demanded, syncope occurs. Marked accentuation of the second sound under these conditions is therefore to be regarded as a danger signal of grave significance and demands the exercise of extreme watchfulness.

Symptoms or complaints in growing children of loss of strength and energy on exertion, followed by a feeling of faintness, or a feeble pulse and a desire to lie down should always lead to careful investigation of state of the heart wall.

In the treatment of the severer forms of cardiac dilatation absolute rest in the recumbent position is necessary and should be associated with a diet nourishing but carefully regulated to prevent over distension of the stomach by flatulence. In some instances it may also be advisable that the amount of liquids ingested should be reduced to a minimum. No drug has so powerful an effect upon the heart muscle as digitalis and in most of these cases its exhibition in full doses is demanded. Strychnine, although possessing a slight action upon the heart muscle, has a more distinct action upon the cardiac nerve centres and may be employed at the same time as digitalis. In those cases in which we have distinct accentuation of the aortic sound, the exhibition of the nitrites would also appear to be indicated since by dilating the superficial systemic capillaries they may lighten the work of the left side of the heart. At the onset of the acute symptoms it may be necessary to have resort to the more diffusible stimulants, ether, ammonia and alcohol.

# RETROSPECT OF CURRENT LITERATURE.

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## Medicine.

UNDER THE CHARGE OF JAMES STEWART.

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### Malaria.

PATRICK MANSON, M.D., C.M.G., LL.D. "Ætiology, Prophylaxis and Treatment of Malaria."

D. C. REES, M.R.C.S., L.R.C.P. "Its Parasitology, with a Description of the Methods of Demonstrating the Organism in Man and Mosquito."

LOUIS W. SAMBON, M.D. "The Intermittent Fevers and Black Water Fever."

ERNEST E. AUSTEN. "The Genus Anopheles." *The Practitioner*, London, March, 1901.

The mosquito malaria theory has brought with it an expansion of a score of facts long since observed by those who have lived in malarial countries. Those conditions which disposed one to taking the disease are favourable to mosquito life, while those conditions which are considered protective, no one knew why, are not favourable for the growth and activity of this insect. Hence, among many other facts, it is clear why the danger increases with being out of doors at night in malarial districts, and why, also, smoke and fire act as protection against the disease.

Dr. Manson remarks that the etiology of malaria, therefore, resolves itself into a study of the natural history of certain species of mosquito, the circumstances following their multiplication, those favouring their infection with the malarial parasite, and those favouring their communication of the parasite to man. Mosquitoes belonging to the genus *Anopheles* have been found efficient hosts for the parasite, while in a few species belonging to the genus *Culex*, the parasite has been seen to develop only in its earliest stage. It is thought that all the species of the genus *Anopheles*, of which there are thirty, may be dangerous to man.

There is but little doubt that the principal and usual source from which the mosquito derives its malarial parasite is man, while from what





an unhealthy district and develop the disease only after he has reached a healthy or infected region.

*Prophylaxis* may be considered from different standpoints. (1) Suppression of mosquitoes by draining of swamps and ponds, cleaning and quickening the slow-running streams, etc., etc. About households and gardens, pools and puddles should not be tolerated, flower pots and broken bottles should never be allowed to retain water until it is stagnant. "Painting" stagnant waters with petroleum will prevent the development of the larvæ.

(2) Prevention of infection of mosquitoes. This consists in insisting in all malarials using mosquito nets, or deporting all such individuals to a locality where there are no anopheles.

(3) Prevention of infection by mosquitoes. This seems to be the only prophylactic measure that can be effectually carried out. The house and the beds in the house should be mosquito proof. In application of this measure, carried out by Celli in 1899-1900 on railway employees working in a most malarial county, out of 207, ten only contracted the disease, the rest (197) remaining free from the infection.

Grassi's experiments confirm the above, while Ferrier and Tonsini's experiments of mosquito destruction by the use of kerosene on stagnant water about the convict station and lazaretto on the Island of Arsinara, and the burning of the culicidal powders in the dormitories of the prison and in the cottages, resulted in the development of no fresh cases during the entire malarial season from June to November.

The prophylaxis by quinine is worthy of consideration, and while not uniformly successful, is nevertheless to be enjoined.

*Treatment.*—Quinine is the only reliable drug in malaria. Euquinine is at present on its trial. For ordinary intermittent fever Dr. Manson recommends 10 grs. to be given when the sweating stage commences, followed by 5 grains every six or eight hours for a week, and with a view of preventing relapse, 5 grains three times every fifth, sixth or seventh day, for three months. For bilious remittent fever a full dose of calomel followed by a saline cathartic should be given at the outset and then followed by the treatment as given above for intermittent fever. The best time to give quinine is that when the spores of the parasite are free in the blood, thus an hour or so before the expected paroxysm. However, this is of little practical value. Quinine is to be given in solution and when the case is grave, hypodermically or intra-muscularly. A soluble salt, such as the sulphate, dissolved with the aid of half its weight of tartaric acid, may be used. If good effects do not follow one must double or further increase the dose. Methylene blue may be used by those who cannot bear quinine.

### **The Parsitology of Malaria.**

The malarial parasite belongs to the Protozoa, the sub-order or group *Hæmamœbidæ*. In genus 7 of *Hæmamœba* there are two species of human parasites, viz.: *Hæmamœba vivax*, the parasite of benign tertian, and *Hæmamœba malaria*, that of quartan fever. In genus 2, *Hæmamenas*, is included the *Hæmamenas præcox*, the parasite of malignant or tropical malarial. Concerning this parasite some difference of opinion exists among the authorities.

It is generally thought that the three above-named parasites are distinct, although Laveran and many French observers maintain that the human malarial parasites belong to a single species.

The parasite of malaria is parasitic in man and in a certain genus of the mosquito, the former is its intermediate host, the latter its definite host. Among other distinguishing characteristics common to the different species, which are enumerated in most text-books upon this subject, the degree of amœboid activity and the character of the pigment produced serve as most important diagnostic features. The most interesting feature of the life history of this parasite is the mode of reproduction. There are two such modes, the one, endogenous, asexual, by spores, and without the intervention of the mosquito; the other exogenous, sexual, and requiring a passage through a certain genus of mosquito. The former was first carefully studied by Golgi and may be called the cycle of Golgi, while the latter may be termed the cycle of Ross, as our knowledge of it is due mainly to his brilliant researches.

The human phase of the parasite is well-known to all but only recently has the mosquito phase been carefully worked out, and it may be well to follow this a little more fully. The large pigmented spheres and the well-known crescent bodies represent the forms of the parasite which require to enter the stomach of the anopheles in order to allow full development. Rees says that it is probable that a certain proportion of the spores develop into these pigmented spheres and crescents. According to Bastianelli and Bignami, these forms have been found in the bone marrow.

The spheres are found in the peripheral blood early in the course of the disease, one or two days after the onset of the fever, while the crescent bodies do not appear until about a week from the onset of the fever. These spheres seem to belong to two classes, as manifest in their subsequent development. One class presents flagella and are regarded as males or microgamocytes; the other class does not flagellate. They represent females in the sexual cycle. The sex of crescents is determined by the Romanowsky staining method, the protoplasm of the



female crescents staining more deeply, while the pigment is more closely grouped together. The flagella are to be regarded as the homologues of the spermatozoons of higher animals.

The next stage in the life of these parasites has been observed but once in human malaria, and thus this important link in the chain of the malarial cycle was supplied by MacCallum of America. Similar observations, however, have been made on the halteridium, one of the malaria-like organisms of birds. Dr. McCallum observed flagella break away and approach the non-flagellate spheres, and then one of them was seen to enter a sphere, which was momentarily disturbed. It then became quiescent and gradually elongated, the pigment gathering at the posterior or thicker end of the now fertilised cell, and assuming the shape of a spear head, it became actively motile and moved freely in all directions, piercing any blood cell that might be encountered. These observations have been confirmed by Koch and others, and it is believed that it is this body that pierces the stomach wall of a mosquito and develops into a *zygote*.

If mosquitoes belonging to this genus (anopheles) take the blood of an individual bearing crescents, it may be found later that a variety of forms develop in the stomach and intestinal tract of these insects. At first if the examination is made a few minutes after feeding, the blood in the middle intestine will be found to contain flagellating and non-flagellating spheres. On the second day one may find pigmented spheres or zygotes. In the course of a few days the pigment spheres become surrounded by a capsule. Then these spheres within the capsule divide and subdivide and produce the zygotomeres.

Upon the surface of these little spheres bud-like processes develop, giving them a hedgehog-like appearance, ten or twelve of which are contained within a capsule. Then these processes which have appeared upon the spheres within the capsule elongate and become sickle shaped completely filling the cell and causing the spheres upon which they have been formed to disappear. In this course of maturation of the large spheres they protrude through the walls of the intestine and eventually rupture setting free these sickle shaped bodies (sporozoites), which are carried over the body of the mosquito and are filtered out by the salivary glands. These bodies contain a nucleus of chromatin matter and are the actual source of infection to man, and they have been traced as far as the end of the proboscis of the mosquito. This cycle occupies a period varying from six to sixteen days or perhaps longer.

The demonstration of the malarial parasite in the human blood is a very simple matter to those who know well the appearances of normal



blood. The technique and the stains need not be described here. We also pass over the description of the parasite in the mosquito, as well as that which pertains to the method of breeding, transporting and infecting them.

The characteristics of the parasites of the different forms of malarial fever are so well described in the text-books that they need not be reproduced here.

Sambon distinguishes between the parasite of semi tertian-fever and quotidian fever, and urges a return to the use of the term "semi-tertian" after the custom of the ancient physicians. There is yet a difference of opinion among the authorities upon this point, as to whether the distinct species exist. Some maintain that the pigmented and unpigmented quotidian parasites are merely varieties of the semi-tertian parasite. Sambon remarks that Marchiafava and Celli, who first described a "quotidian parasite," while regarding it as similar to that of semi-tertian fever, distinguished it by its smaller size, less active movements, and its shorter life cycle of barely twenty-four hours.

There remain, however, the two genera with three species well-established, giving rise to the three forms of fever. What concerns the distinction between the semi-tertian and quotidian remains to be established by further observations.

A word about the cause of fever arising in the segmentation stage of the intermittent fevers. The generally accepted theory is that it is caused by some toxic substance elaborated by the parasite or derived from the disintegrated erythrocytes and set free at the time of segmentation. Sambon inclines to the view that the febrile reaction is connected rather with phagocytosis than with either the products of the parasite or necrosed corpuscles. He sees also an explanation of the irregularity and prolongation of the fever in the semi-tertian and quotidian, in the irregular and rather slow segmentation of the parasites, and because of the long duration of the paroxysms these forms of fever become very frequently subcontinuous.

Multiple and mixed infections explain many varieties observed clinically and microscopically. The idea that one often gets typhomalaria, malarial pneumonia, and many other forms of specific diseases due to the malarial parasite, must be abandoned in the light of the knowledge following upon the discovery of the hæmatozoa of intermittent fever. Pernicious attacks of malaria are usually those due to unchecked semi-tertian infections and are never found as first attacks, but are usually preceded by several attacks.

#### **Crescents.**

Laveran first described them in semi-tertian fever. From them spheres were derived, so he believed that they (the crescents) repre-

sented a kind of cyst containing the flagella. Bastianelli and others regarded them as degenerate forms of the smaller, amoeboid, hyaline organism. Grassi and Feletti believed that crescents represented a distinct type of parasite which they termed the *Laverania*. According to Ewing the crescentic body is a form of the parasite adapted to further development in a new host, for in the bodies of mosquitoes fed upon blood containing crescents are found the fully developed parasite.

Whence its origin in man is yet unsettled. Mannaberg thought that the conjugation of two ring forms might account for their formation. The coccidia in rabbits, salamanders, and other animals form crescentic bodies by segmentation of a large spheroidal body. This, it is claimed, never occurs in the human subject.

The relations which crescents bear to ovoid or spheroidal forms has not been determined, but it is thought that crescents may assume a spheroidal form and extrude flagella, and that spheres may revert to crescentic forms.

Ewing's conclusion from his observations upon the habits and formation of crescents is that the ovoid and spheroidal bodies seen in ordinary stained specimens are usually younger forms than the elongated crescent, and that the spheroidal bodies in shed blood may be derived from crescents of almost any age. Do crescents sporulate? Authorities differ widely. In 1889 Canalis described segmentation in crescents with the production of eight to ten spores, and while the view that segmentation does take place is accepted by some, yet they do not regard this change as a reproductive one. It appears, therefore, that some changes do occur, yet how these changes affect the host is not determined.

Mannaberg and Manson, 1894, are in accord that the flagellate forms may represent the first steps in a cycle of existence outside the human body. Then in 1897 Simon advanced the theory that the flagella of the malarial parasite were forms of a sexual cycle; in 1899, McCallum followed this up with a confirmation of this in the halteridium of birds.

### **Inoculations.**

The process of inducing the disease and the subsequent demonstration of the parasite in the blood have gone furthest to prove the plurality of the species of parasites inducing this disease. Altogether forty-two experiments are on record, not including those cases in which the disease was experimentally induced by means of the mosquito.

*W. F. Hamilton.*

## Review of Treatment.

UNDER THE CHARGE OF A. D. BLACKADER.

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### On the Treatment of Diarrhœas in Infancy.

It is possible that in infancy a relaxed condition of the intestinal tract may be of nervous origin, but a definite instance in which some form of nervous irritation could be regarded as the chief exciting cause of an attack of diarrhœa I do not remember to have seen. It cannot be too strongly affirmed that the great exciting cause of all the diarrhœas of infancy is the presence of some irritant in the intestinal canal, almost invariably of bacterial origin, and more or less poisonous in its systemic effects according to the particular form or forms of bacterial life concerned in its production. It is also to be remembered that at the commencement of the disorder and for a variable time afterwards, the *fons et origo mali* is limited to the contents of the gastro-intestinal tract.

With these important facts strongly impressed upon us the indications for treatment are evident: the tract must be cleared of the irritating and poisonous material, and of the pathogenic bacteria which develop in it, as promptly and thoroughly as possible, and for some days all food which is able to serve as a culture medium for the growth of such germs must be withheld. Partial starvation is much to be preferred to poisoning.

To fulfil the first intention it is desirable to make use of a non-irritating but promptly acting purgative, and, if the stomach does not resent its presence, no drug acts more promptly and effectually than a full dose of castor oil. As promptness of action is important, this dose should contain no opiate or other sedative that would in any way hinder its action. Another drug fulfilling the same indications is calomel, which has also the advantage of having some slight antiseptic action, and of being easily given and retained by the stomach. In an infant under a year old it may be administered in the form of a powder or triturate:  $\frac{1}{10}$ th of a grain every half hour for six or eight doses. If combined with sodium bicarbonate its sedative action on the gastric mucous membrane is increased. In older and lustier children the dose may be a larger one,  $\frac{1}{6}$ th to  $\frac{1}{4}$ th of a grain, repeated every half hour till one or two grains have been given. After free evacuations have been secured the calomel may be continued for another 24 or 48 hours in smaller doses at longer intervals.

If the systemic disturbance is severe, in addition to purgatives it is desirable to wash out the colon as thoroughly as practicable with normal saline solution, at a temperature from 95-98° F. In carrying out this irrigation the important points to be borne in mind are that the infant's hips must be well raised so as to favour the flow of the solution towards the higher portions of the canal, and to make sure that the flow be slow and gentle the receiver must not be raised more than two feet above the level of the child. Too great rapidity or force in the inflow of the water will irritate the sensitive mucous membranes and stimulate premature contraction of the muscular wall of the intestine with rejection of its contents before the water has penetrated a sufficient distance. Antiseptics in this solution are undesirable in my opinion, lest retention of some of the solution take place with subsequent absorption, inducing depressing effects on the circulation.

Such an irrigation if done effectually once or twice, need not be afterwards repeated very frequently. I have never been able to persuade myself that, if due care is exercised in the feeding of such an infant, I have obtained any distinct advantage from frequently repeated irrigations.

Although by these measures we may secure the evacuation from the intestinal tract of almost all its contaminated contents, any attempt to administer food of any kind, but especially milk food, to the infant, whose digestive powers have been temporarily paralysed by the attack, can only result in such food remaining more or less undigested, and acting as a new culture medium for the development of a fresh crop of poisonous bacteria. The necessity of withholding milk food is further emphasized by the consideration that even under normal conditions the digestion of milk appears to be accomplished almost entirely in the small intestine, and not, as in the adult, chiefly in the acid, and therefore to some extent, antiseptic medium of the gastric juice. Especially is this true of cow's milk the greater portion of which passes in a merely curdled condition from the stomach into the duodenum where its gastric acquired acidity is neutralised; should the digestive secretions there be impaired in quality or quantity and digestion proceed slowly, it becomes a culture medium for the development of any pathogenic organisms with which it may be infected. Clinically, it appears to be imperative that milk foods, and especially cow's milk, should be entirely interdicted during an attack, and its use is only to be cautiously resumed in convalescence in such small quantities as can be easily and promptly digested by the infant.



My own experience corroborates that of a recent writer who says : "The physician who wishes to do his full duty to the patient must stop the milk diet at once; it matters not whether the diet is breast milk or cow's milk, or whether the cow's milk is sterilised or not sterilised; it matters not whether the stools are frequent or infrequent, neither does the character of the stool cut any figure; as long as there is evidence of intestinal derangement, the milk diet must be discontinued. It is useless to give laxatives and wash out the few bacteria, and then feed milk to the hosts that remain."

For the past few years it has been my rule at the onset of an attack of diarrhoea, to withhold all food from the infant for at least 24 hours permitting only water or a little weak spirits and water. After 24 hours a pre-digested or dextrinised gruel may be given, at first in small quantity, but the amount may be gradually increased; the intervals between the feedings should be not less than two hours. As the case improves a weak, partially predigested meat broth or essence may be added to the dietary; only such food however is to be permitted as we may feel certain will be absorbed rapidly and as completely as possible from the mucous membrane of either the stomach or upper portion of the small intestine.

It is surprising to one who remembers the very unsatisfactory results obtained from the older plans of treatment by means of astringents and even antiseptics, to note the rapid improvement that takes place in the majority of cases when these measures are carefully carried out.

At the present the administration of drugs plays only a secondary part in the treatment of diarrhoea, nevertheless we may obtain valuable assistance in many instances from their judicious employment, and for obvious reasons it is not desirable to altogether neglect them. The general consensus of opinion points to one of the preparations of bismuth, either the carbonate or subnitrate, as being of distinct benefit if given in full doses of at least 10 grains every two or three hours. If the movements are very frequent or very watery, a small amount of opium may be added in the form of the camphorated tincture of opium. Many cases unfortunately are seen too late for full advantage to be taken of the above measures and in such the presence of irritating material in the intestinal tract for many days has given rise to more or less inflammatory reaction in the superficial tissues of the intestine, chiefly of the large intestine. In such cases, in addition to the endeavor to remove the irritant by the use of purgatives and to the withholding of all fermentable food, I have seen distinct benefit result from the use of high irrigations of a 1 per cent solution of tannic acid given

twice a day. Tannic acid is of little value when given by the mouth and by checking the gastric secretions it may do distinct harm, but employed as an irrigation for the colon it has, in my opinion, a distinctly antiseptic and astringent action.

In those cases in which the fever rises above  $102^{\circ}$  F. a tepid bath at a temperature of  $90^{\circ}$  for five minutes is well borne and often of distinct advantage. I am afraid of cold rectal injections as a means of lowering temperature, regarding them as a measure liable on occasion to produce very depressing effects. Cold sponging is also of much service, but in the case of infants it is a disturbing process and its action as a systemic tonic and stimulant to elimination is much less decided than that of a general bath at  $90^{\circ}$ .

All the intestinal antiseptics that we are at present acquainted with give us but a modicum of assistance in this disorder and their use is not unassociated with a tendency to a depressing action on heart and circulation, an action which we are specially anxious to avoid. Alcohol as a heart stimulant, is of much value, and used in moderate quantities it improves digestion, stimulates absorption, and is to some extent a food.

## Reviews and Notices of Books.

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**THE YEAR-BOOK OF THE NOSE, THROAT, AND EAR.** Edited by G. P. HEAD, M.D., and A. H. Andrews, M.D. Chicago, The Year-Book Publishers, 1901.

To those interested in these special departments of medicine this work will be found invaluable. Interesting articles on various diseases of these organs have been extracted, and the enormity of the undertaking may be judged from the fact that no less than over three hundred journals have been consulted in making the extracts. The occasional running comments of the editors, the reviewer thinks, rather detract from the value of the work. It is to be hoped that the editors will be encouraged in their work by the liberal support which they so richly deserve.

H. S. B.

**INTERNATIONAL DIRECTORY OF LARYNGOLOGISTS AND OTOLOGISTS** compiled by ARCHIBALD LAKE, F.R.C.S., London. The Rebman Publishing Company, (Ltd.), 1899.

This useful book contains the names and addresses of practitioners engaged in the study and practice of laryngology and otology. It is hardly expected that it can be exactly accurate considering the vast territory the names and addresses cover. In so far as Canada is concerned there is a great deal of inaccuracy. Several of the Canadian cities represented contain names of individuals who never existed. Quebec city is quite ignored. It is to be hoped that in the next issue, which is at present being revised, there will be fewer mistakes.

**A TREATISE ON DISEASES OF THE NOSE AND THROAT.** By ERNEST L. SHURLEY, M.D., New York, D. Appleton & Company, 1900.

Embodied in this work is the result of the author's experience as a laryngologist of many years practice, and as a useful addition to the general practitioner's library it is strongly to be recommended. The various subjects are treated in a thoroughly practical manner and without the usual "padding" which makes so many books uninteresting to those for whom the work is especially intended. At the end of the book is a collection of formulæ which the general practitioner will find very useful.

H. S. B.

## Society Proceedings.

### ONTARIO MEDICAL ASSOCIATION.

The Twenty-First Annual Meeting of the Ontario Medical Association was held in Toronto, on the 19th and 20th of June, 1901, the President, Dr. Angus McKinnon, of Guelph, in the chair.

DR. WILLIAM OLDWRIGHT, of Toronto, read a paper entitled, "*Three Recent Gall-Stone Cases.*" The first case, a woman aged 55 years, had been previously treated for a similar attack, and had come under notice while suffering from symptoms of gall-stone obstruction. There was intense pain, vomiting, slight elevation of temperature, and a distinct tumour in the region of the gall-bladder. At the operation there was found a great deal of inflammatory action with stenosis of the duct, and several stones were removed. The gall-bladder was stitched to the abdominal wall and drainage established in the usual way. A good recovery resulted.

The second case was that of a woman aged 65 years, seen in consultation with Dr. McLean of Woodbridge. At the operation, difficulty was experienced in finding the gall-bladder, and there was no doubt, on making an examination, of the presence of malignant disease. The patient died within twenty-four hours from hæmorrhage and shock. The operator thought that if operation had been undertaken some years before, the malignant disease might have been prevented.

The third case, a woman 40 years of age, had had symptoms of obstruction for some eighteen months. Removal of the stones revealed the obstruction to have been in the cystic duct, and resulted in a complete recovery, the patient leaving the hospital on the thirteenth day after operation.

Dr. Oldwright, in replying to the discussion following the reading of his paper, gave as his opinion that operation should be undertaken in every case after the acute symptoms had subsided, as repeated attacks led very frequently to malignant disease.

DR. HERBERT A. BRUCE, of Toronto, exhibited a woman, 34 years of age, upon whom he had performed an "*Excision of the Upper Jaw for Sarcoma.*" The operation had been performed three months after the growth was first noticed, which then consisted of a very hard swelling just behind the second bicuspid tooth, and extending backwards to the full extent of the jaw. Internally it had not extended to the middle line, and bulged externally to the extent of half an inch beyond what would be the line of the teeth. A polypoid mass was



present in the roof of the mouth, covered by mucous membrane, and also in the left nostril, which was partially obstructed. The operation was done on the 29th of April and the patient left hospital on May 18th, having made an uninterrupted recovery.

DR R. W. GARRETT, of Kingston, introduced a discussion on "*Ectopic Gestation*." He held that the subject was one of vital importance to every practitioner, as at any time he might be called upon to make a diagnosis in a case in which this was one of the possibilities. He discussed at considerable length the causation and varieties of the condition, and thought that in a fairly large proportion of cases it was possible to make a diagnosis before rupture took place. Dr. Garrett limited his remarks more particularly to tubal pregnancy, the etiology, symptomatology and diagnosis of which were dealt with fully. In concluding, he recited the history of a very interesting case in support of his contention of the difficulty surrounding diagnosis.

DR. J. F. W. ROSS, of Toronto, confined his remarks mainly to the question of diagnosis, and was followed by many members, who all agreed in the difficulty of arriving at a definite conclusion as to the nature of some cases.

#### **President's Address.**

DR. MCKINNON, after referring to the honour of being chosen to fill this position, contrasted the state of medicine at the beginning of the past century and at the present day, mentioning the various advances which medical science had made. He deplored the increase which had taken place in the employment of proprietary medicines, and thought that harm was being done to the profession by the pills now sold as specifics for malaria, neuralgia, etc., etc. The literature and drugs sent out by these enterprising firms had become an intolerable nuisance. The electric belt man, the Christian Scientist, the advertising cancer-curer, the osteopath, and many other such like fakes which hang on to the skirts of medicine, he scored most unmercifully, and regretted that the public press, both secular and religious, opened their columns freely to these fulsome, untruthful and sometimes immoral advertisements, because they pay well. There was great danger to the public in permitting Christian Scientists, the "pray-for-hire-dealers," and the "Dowieites," impudently undertaking to cure infectious diseases, such as diphtheria, scarlet fever and smallpox—diseases which they are unable to recognize, and he thinks that we have come to a point where toleration and forbearance become criminal. The 2,500 medical men in Ontario should have influence enough to obtain from the Legislature an amendment to the Medical Act which will put an end to this trifling with human life. He directed attention to the delay that occurs in

securing admission to the asylums for people the subjects of acute mania, and thought it was high time the necessary steps in this department in the practice of medicine should be simplified.

DR. J. H. ELLIOTT, Medical Superintendent of the Sanatorium at Gravenhurst, read a paper entitled, "*Pulmonary Tuberculosis: Its Treatment in Special Sanatoria.*" Speaking generally, from 50 to 70 per cent. of the incipient cases were restored to health, while of all classes, from 15 to 30 per cent. were reported as cured or arrested, and from 60 to 70 per cent. as improved. The first improvement noted after entering the sanatorium was in appetite, then followed a gradual gain in weight and fall in temperature. Night sweats disappeared, the cough and expectoration lessened, and sleep was improved. The principles of the treatment were a continual life in the open air, with rest or exercise as indicated, a liberal suitable diet, symptomatic medicinal treatment, hydrotherapy, and a strict medical supervision of the patient's daily life. A strong point was made of the physician's personal supervision attainable in a sanatorium, where the doctor lives with his patients and is able to study his cases and individualise the treatment. Dr. Elliott also referred to the work already done and now being carried on in the matter of tuberculosis and serums, and expressed the hope that some day a specific would be secured for those cases at least where a mixed infection was not present.

DR. P. H. BRYCE, of Toronto, the Secretary of the Provincial Board of Health of Ontario, presented a paper on "*Vaccinal Protection against Smallpox.*" He thought that in the century which had elapsed since the introduction of vaccination, there never had been a time in which there was as much scepticism expressed against its value by the laity as at present, and, moreover, as much indifference on the part of the profession. In Ontario, between 1898 and 1899 there had been 22 recorded deaths from smallpox. He contended that five separate insertions should be made in each case of vaccination and with a known quantity of lymph. He deplored the fact that no instruction in the art of vaccinating was commonly given in the colleges. A lengthy discussion followed, in which the participants were unanimous in their approval of Dr. Bryce's remarks.

DR. FERGUSON, of London, introduced a "*Discussion on Empyema,*" taking up the medical aspect, which he stated was limited to a consideration of its pathogenesis and prophylaxis. In its etiology he spoke of four class, namely, pneumococcic, staphylococcic and streptococcic, tuberculous, and saprogenic organisms. The prognosis was best for the form due to pneumococci, which was the only form which might get well by aspiration without surgical interference.

DR. J. L. TURNBULL, of Goderich, discussed the surgical aspect. He advocated the resection of a portion of a rib, and daily washing out of the cavity in foetid cases, gradually shortening the drainage tube each day. Where the cavity would not close, he advised an Estlander's operation, mopping out the cavity with pure carbolic acid followed by alcohol to prevent poisoning.

In the discussion which followed several members expressed the opinion that the success of the operation depended mainly upon its being undertaken early and consequently on an early diagnosis being made.

DR. GEORGE H. CARVETH, of Toronto, read a paper on the "*Open Air Treatment of Disease*," describing three methods, either by wide open windows, beds on the veranda, or beds on the lawn under tents. At first he had had some difficulty in persuading his patients to undertake the treatment, but most of them after trying it were loth to return indoors. Some of the cases he had treated in this way were iritis, fracture, radical cure of hernia, rheumatoid arthritis, tuberculous disease of the spine, typhoid fever, and a case of hysterectomy.

Dr. Bryce spoke of the value of treating smallpox patients in tents, which should be double roofed and double floored, and provided with a stove. Drs. Freel, Elliott, and Hunter all related cases showing the value of open air treatment. Dr. Ryerson quoted the statistics of the treatment of enteric fever in tents and improvised hospitals in South Africa, showing that the advantage was decidedly in favour of the former.

DR. PREVOST, of Ottawa, read a paper "*On the use of Nitrous Oxide and Ether as an Anæsthetic*." After defining the qualities of what could be considered a good and satisfactory anæsthetic, he gave the results of his personal experience, with Dr. Gorrell as assistant, during two years, with the above combination. The apparatus employed was Hewitt's modification of Clovers' inhaler. Out of 307 cases, anæsthesia was induced in one minute in 24, 1½ minutes in 55, 2 minutes in 94, 2½ minutes in 47, 3 minutes in 44, 3½ minutes in 9, 4 minutes in 19, and 5 minutes in 14. With regard to the effect upon the kidneys, albumin had been observed 26 times in 434 cases. Post-operative vomiting was rare. Dr. Prevost, although the first surgeon in Canada to employ intra-spinal cocainization, did not think it should supersede ether when results like the above were obtainable by competent men.

DR. CHAS. T. NOBLE, of Philadelphia, read a paper on "*The Complications and Degenerations of Fibroid Tumour of the Uterus, with Reference to the Treatment of these Growths*."

DR. J. T. DUNCAN read a paper "*On the Importance of an Early*



*Recognition of Locomotor Ataxia—Do the Eye Symptoms Assist us?*" He dwelt upon the prominent eye symptoms present early in the disease.

DR. D. J. GIBB-WISHART, of Toronto, read "*Notes on the Use of Adrenalin.*" He reported the results of several hundred office applications to the mucous membrane of the nose, especially for controlling hæmorrhage in small operations in the nasal cavities. Its use rendered such operations practically bloodless. In the removal of adenoids or enlarged tonsils it had not proved of much service.

#### **Discussion on Gastric Ulcer.**

DR. R. D. RUDOLF, of Toronto, in opening the discussion, gave a short historical sketch of the chief literature on the subject. He propounded five questions on gastric ulcer, the first being as to its relationship to cancer, and quoted authorities showing that from 5 to 9 per cent. of all gastric cancers so arose. With regard to whether it was possible to diagnose the site of an ulcer, the speaker showed that the general consensus of opinion was against such a possibility except in rare cases, and enumerated the symptoms which might help one to come to a conclusion. Regarding the use of ergot as a styptic in gastric hæmorrhage, he was inclined to think that it might interfere with the natural formation of a clot following on the lowered blood pressure by raising the pressure. Turpentine had no such objection, and calcium chloride increased the tendency to clotting. The question as to whether cases of apparently cured ulcer were ever safe lives from an insurance point of view, he answered in the negative on account of liability of recurrence and of sudden perforation after years of quiescence. As regards operation, it should be performed immediately perforation was diagnosed, but where no perforation exists the question was not so easy to answer. Severe uncontrollable hæmorrhage should be an indication for operation in some cases, but the mortality from hæmorrhage was surprisingly small.

DR. H. B. ANDERSON, of Toronto, discussed the pathology, limiting his remarks to the common round ulcer. The condition was found most frequently between 20 and 40 years, but the mortality was greater from 40 to 60 years. Females were sufferers twice as frequently as males. The predisposing causes were enumerated, and the essential cause was, according to the speaker, hyperchlorhydria and an abnormal condition of the blood. He did not favour the theory of bacterial origin. The pathological anatomy of gastric ulcer and its terminations were discussed and illustrated by specimens.

DR. HENRY HOWITT, of Guelph, considered the surgical aspect of the question. He first took up the technique of the operative procedure for dealing with a non-perforated ulcer, dwelling on the necessity of



thoroughly washing out the stomach beforehand to render it as aseptic as possible. With regard to perforated ulcer, Dr. Howitt advocated the giving of morphia, both to keep the viscus at rest and to lessen the amount of anæsthetic required during the operation. Success depended, he thought, on the length of time elapsing before operation. Delay was dangerous. It was his practice to allow of the escape of gas by incisions in the bowels, which he made and closed before attempting the repair of the ulcer. The latter, where possible, he excised and closed the opening with two or three layers of sutures. Where this was impossible from the situation of the ulcer, he generally inverted it and closed it by layers of sutures. He recommended thorough flushing of the abdominal cavity with saline solution as one of the last steps of the operation.

DR. T. SHAW WEBSTER read a paper entitled "*Vaginal Section, Exploratory and Operative*," describing several operations, one for ectopic gestation.

DR. S. CUMMINGS, of Hamilton, read a paper on "*The Röntgen Rays in the Diagnosis of Urinary and Biliary Calculi*," exhibiting skiagraphs in illustration of the same.

DR. GRAHAM CHAMBERS, of Toronto, gave a "*Preliminary Report on the Relations of Hyperchlorhydria to 'Bilious Attacks,' some forms of Eczema, Gout, and Muscular Rheumatism*," stating that he had found hyperacidity, due to excess of hydrochloric acid, in many cases giving a history of "bilious attacks." In these same cases there was also hyperæsthesia of the mucous membrane of the stomach, and the speaker thought that many factors pointed to a relation between these two conditions and the diseases mentioned. An examination of the gastric contents of six cases of eczema showed the presence of hyperchlorhydria. The same could be said of gout, and possibly of muscular rheumatism, although the latter point was not definitely settled.

DR. W. B. THISTLE, of Toronto, discussed the "*Medical Treatment of Surgical Tuberculosis*," advocating medical treatment in many cases which were at present relegated entirely to surgery. He thought that sunshine and fresh air were too often neglected in the case of surgical tuberculosis.

DR. WALTER MCKEOWN, of Toronto, in a paper on "*Post-Operative Peritonitis*," considered that normal saline solution, either subcutaneously or intravenously injected, and the use of enemata of magnesium sulphate, would cause the elimination of the toxins by their dialysis through the intestinal walls.

The last session was devoted to business. The officers for the coming year were elected as follows:—President, N. A. Powell, Toronto; 1st Vice-President, R. Ferguson, London; 2nd Vice-President, R. W.

Garrett, Kingston; 3rd, L. C. Prevost, Ottawa; 4th, R. L. Turnbull, Goderich; General Secretary, Harold C. Parsons, Toronto; Assistant Secretary, George Elliott Toronto; Treasurer, A. R. Gordon, Toronto.

The following resolution on the necessity of vaccination was drawn up by the committee appointed for the purpose and passed unanimously:—

*Resolved*, That the Ontario Medical Association desires hereby to re-assert the opinion of the medical profession of this province:

1st. That the principles of Jennerian vaccination against smallpox, which have been now attested by the experience of more than a century, are scientifically correct.

2nd. That in order to carry out the protection through vaccination against smallpox it is necessary that the lymph used in the operation be of normal quality, and that this can be shown only by a proper amount of systemic reaction to the vaccine, as determined by the character of the vesicles, and that the absence of a normal reaction, as shown by the presence of vesicles, is no positive evidence of the immunity of the person either against vaccinia or smallpox.

3rd. That this Association emphasizes the urgent necessity that the scarification of the skin be sufficiently extensive to secure such reaction, and to this end recommend that from three to five insertions each of a quarter of an inch square be made in each vaccination. This was carried.

**Medical Defence Union**—On motion of Dr. J. F. W. Ross, seconded by Dr. A. Primrose, a committee was appointed to inquire into this matter, to report at the next meeting of the Association in 1902.

## Correspondence.

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### MATTERS OF PARAMOUNT IMPORTANCE TO THE PROFESSION—THE COLLEGE OF PHYSICIANS AND THE PINEAULT AND ROY LAWS.

*To the Editors of the MONTREAL MEDICAL JOURNAL.*

The College of Physicians has been recently condemned by the Courts of Quebec to hand over a license to practice medicine to seven young graduates of Laval University at Quebec, and, moreover, to pay to six among them a fine of \$100 each for refusal to grant it. The College of Physicians had not refused a license to these young men, but insisted before granting it on the fulfilment of the formalities required by the medical law of the Province of Quebec. The courts maintained, notwithstanding the affirmation of the College that all the requirements had not been complied with, that a license should be granted to the plaintiffs.

The question at issue is, indeed, a very important one, for it directly imperils, by substituting judicial to medical authority, not only the general welfare of the profession but especially the privileges granted by the law to the corporation of Physicians, and incidentally to its Provincial Board. Thus do we believe it to be our duty to explain to your readers the facts of the case and to note the conclusions to be deducted therefrom.

Let us first consult the revised statutes of the Province on the manner of obtaining the license of the College. Art. 3978 reads:—

“No person shall be admitted as a student of medicine, surgery or midwifery unless he has obtained a certificate of qualification from the Provincial Medical Board. No one is entitled to the license of the College on presentation of a diploma unless he has been previously admitted to the study of medicine in accordance with the provisions of this section, or unless he has passed an equivalent preliminary examination before a college, etc., etc....”

This last phrase regards Bachelors of Arts. Art. 3978 seems very clear to us, and it may be summed up by stating that a student who has not registered in the books of the College by presenting his diploma of Bachelor or his *brevet* (Provincial Board matriculation) has *no legal existence*, that is to say, is recognised neither by the law nor by the College of Physicians, and would not obtain the license even though he passed his university examinations. On the other hand, the regularly registered student, four years after the date of his registration,

is entitled to the license if he successfully passes his examination at the medical faculty where he studied, as set forth by Art. 3977 of the Revised Statutes, as follows:—

“Every person who obtains a medical degree or diploma in any university or college mentioned in article 3972, is entitled to such license without examination as to his medical knowledge and skill, provided that such diploma has only been given after four years of medical study from the date of admission to study and according to the requirements of the section, etc.”

Does this signify that the non-registered student is forever debarred from obtaining the license of the College? No: but by not registering he has placed himself in a somewhat awkward position. Having no legal existence as a medical student, while undergoing his university examination he remains ignored by the Assessors of the College, who are not authorized, either by the law or by the regulations of the College, to take any notice of his examination. Note that the law obliges the College to enact such regulations:—

Art. 3983:—

“For such purpose the Provincial Board shall appoint or elect Assessors, two or more of whom shall attend the examinations at each university, college, or incorporated medical school in accordance with one or more by-laws to be passed by the Board.”

The following are the regulations enacted by resolution sanctioned in 1894, by the Lieutenant Governor in Council.

“To be entitled to present himself for the primary examination before the assessors, each student must prove that he has been admitted to the study of medicine by this Board for at least two university sessions..... To be entitled to present themselves for the final examination before the assessors the candidates must have studied in a university, college, or school of medicine of this Province during not less than four sessions from the date of the certificate of admission to study by the Board; and they must have fully complied with the regulations of the College of Physicians and Surgeons of this Province, and, also, they must have passed the primary examination to the satisfaction of the assessors of the Board.”

The non-registered student leaves the university with a worthless diploma so far as his license is concerned. To be recognised by the College of Physicians he must do what he should have done at the very first, namely, have his name inscribed in the official register of the candidates for the license, and for that purpose pass the proper examinations before the examiners of the College. Moreover, as the law prescribes that a student only has a right to a license, inasmuch as he has obtained his diploma after four years of medical study from the date of his admission to study, the non-registered student must, after undergoing his preliminary examination or *brevet* before the College of Physicians and registering his name with the Registrar, wait four



years more before he be allowed to pass an examination before the examiners of the Board to obtain a license. It is in a way a penalty imposed on those who have not observed the rules.

But this delay of four years, it appears, offered in many cases serious obstacles. Numbers of young doctors holding valid diplomas from the universities but not having been previously admitted to the study of medicine by the College of Physicians, would seek to obtain from the Quebec Legislature their release from these four years of delay, alleging all kinds of excuses, such as sickness, poverty, absence from the country, etc. The Legislature, always compassionate, would sanction a private Bill allowing them to obtain a license from the College after examination and without delay. Finally, on account of the ever-increasing number of private Bills the Legislature tried to do away with them by authorizing the College to repeal the delay of four years. Hence the Pineault law (1898) which reads as follows:—

“Notwithstanding article 3978 of the Revised Statutes, the College of Physicians and Surgeons of the Province of Quebec is authorized to admit to practice the medical students who on the first of November, 1896, had commenced attending a medical course in a duly incorporated university of the Province of Quebec before having obtained a certificate of admission to the study of medicine, and grant them the necessary license to practice medicine, surgery, and obstetrics after having passed the examinations required for admission to study and those required for admission to practice.”

The Pineault law, as may be seen, does not exempt the non-registered students either from the matriculation examination (*brevet*) or from the license examination; it only exempts them from the four years that must elapse between the one and the other.

The Roy amendment adopted in 1900 goes further:—

“Nevertheless, the said College may, whensoever they consider that the circumstances justify them in so doing, exempt any such student from the examination required for admission to study.”

In this case there is no error, the law authorized the Board of Physicians to deliver “when circumstances justify their so doing” the license of the College to those who have no *brevet*. But this applies only to the *brevet*, and the law does not compel the College to acknowledge the university examination of students whose names do not appear in the register. If the *brevet* (matriculation examination) is abolished for non-registered students, the obligation of undergoing the professional examination before the Medical Board still exists for them, and it remains a fact that, notwithstanding the Pineault law, those students during their medical studies had no legal existence. The Board cannot, therefore, grant them a license without imposing a professional examination before its committee.

Now that we are familiar with the medical laws let us consider the facts of the case. No sooner had the Pineault law been modified by the Roy amendment (February, 1900), than several young men, having studied medicine without previously registering with the College of Physicians, petitioned to be exempted from the examination for admission to the study of medicine. At its meeting of July 1900, the Board took into consideration the petition of 34 of those young men and agreed to grant them all the benefits of the Roy amendment, provided they underwent the professional examination before the Board as required by the statutes. The motion read as follows:—"Dr. Marsolais proposes, seconded by Dr. Jobin, that a professional examination before the examination committee of the Board of Governors be demanded from all candidates from whom the Board will grant the privilege of the Pineault law (1898) modified by the Roy amendment, passed in 1890. It is then unanimously resolved that all the irregulars who have made application to the Board be given the privilege of the Roy amendment."

This resolution only confirmed the rules and regulations of the medical law and of the College, giving at the same time to all those young men the benefit of the new law. Up to this stage everything is normal; there is a perfect understanding between the Legislature and the College of Physicians.

Mr. Joseph Gosselin, a student of the University of Laval of Quebec, after being exempted from the *brevet* (matriculation) examination, refused to undergo the professional examination before the College, maintaining that, although he was not a qualified student, he had passed his university examination in presence of the assessors of the College through a special permission granted to him in 1898 by the President of the late Provincial Board of Medicine. Mr. Gosselin claimed that the Board should give him his license, since he had passed his final examination before the assessors. The Board refused to acquiesce in his demand for the three following reasons: (1) Because in 1899 Mr. Gosselin, being a non-registered student, had no legal existence, and the assessors of the College could not take into consideration his examination. (2) Because no officer of the College, not even the President, has the power to change for any reason whatsoever the laws of the Province and the by-laws of the corporation, which establish very clearly the duties of the assessors. (3) Because the Pineault-Roy law does not exempt non-registered students, and Mr. Gosselin was one in 1899 (previous to the adoption of the Roy amendment), from the obligation of undergoing the professional examination before the Provincial Board of Medicine. The Board in support of its contention

relied on its statutes and regulations; it was impossible in our opinion to adopt any other course than that previously followed under similar circumstances.

In September, 1900, Mr. Gosselin brought suit against the College to force it to grant him his license, and Judge Bonaventure Caron gave judgment in his favour in December, 1900. The College appealed from this judgment to the Court of Revision of Quebec, which confirmed the first judgment rendered.

"Whereas the Plaintiff alleges that he has successfully passed all the required examinations: Whereas the Defendant pleads that the Plaintiff is not and never has been qualified according to the laws and regulations in this respect to be admitted to the study and to the practice.....Considering that the Plaintiff and applicant is qualified to take advantage of the provisions of chapter 31 of the Statutes of the Province of Quebec passed in 1898 (Pineault law) as completed by 63 Victoria, chapter 27 (Roy law), and that he has fulfilled all the requirements for admission to the practice of medicine: Considering that the Defendant has not proven the facts adduced in his plea... ..rejects the said defense, maintaining the said writ of mandamus, and declares it peremptory, enjoining the said College to grant a license to the Plaintiff, etc."

Thus is the College of Physicians condemned for having desired to abide by the statutes and regulations of the corporation. In virtue of this judgment an officer of the College may at will change the laws and regulations of the Board, and the Pineault law modified by the Roy amendment exempts irregular candidates, not only from the examination for admission to the study of medicine before the Provincial Board of Medicine, but also from the examination for admission to practice before the same Board.

The gravity of the situation is readily understood. The medical law has already been greatly altered by the Quebec Legislature, if the courts withdraw now from the College the limited authority which it possesses, the usefulness of the Provincial Board of Medicine is very much curtailed. It would be just as well to return to the days of 1847, when judges alone issued medical licenses. Moreover, it would be leaving a door open to the ambition of all who have not complied with the requirements of the law and thus cause disastrous results. Happily the question is not finally settled. The Court of Appeals will soon be called upon to decide the matter, and for the following reason:—

The very same day that Mr. Gosselin won his case against the College in the Court of Revision (thus confirming definitely this judgment as far as Mr. Gosselin is concerned), Messrs. Chabot, Bernard, Brunet, Paradis, Filon and Millette applied in turn to Judge Caron, laying claim not only to their license, but also to \$1,000.00 damages

each. The Judge granted to each of them \$100.00 and their license. The College immediately appealed from this sextuple judgment to the Court of Appeals, where the cases are inscribed for the coming term.

These proceedings were to be expected. The moment the civil tribunals open so widely the door of the corporation, give to the Pineault-Roy law a bearing it has not, and that was never intended to be given it; the moment they authenticated gratuitous permits not authorized by the statutes and even award damages to the supplicants, the chances become far too inviting for the irregulars, several of whom, it appears, intend to exact a license from the College, confiding in the judgment previously rendered.

Can the College of Physicians reasonably favour such transactions? Certainly not. The interests of the corporation are at stake; the Provincial Board must defend them. We sincerely hope the Superior Courts will recognize its rights, regulations and statutes, and will cover with the cloak of justice those who have followed the prescriptions of the law, and not those who have sought for one reason or another to elude them. The fifteen hundred physicians of the Province of Quebec, who at present lawfully practise their profession, and who for that purpose have imposed upon themselves all the sacrifices of work, time, and money demanded by law, are entitled to the protection of the Medical Board and of the Courts, by requiring that all irregular candidates at least comply with the law as amended.

E P BENOIT.



T H E

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

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## THE JUDGMENT AGAINST THE COLLEGE OF PHYSICIANS AND SURGEONS OF THE PROVINCE OF QUEBEC.

We hope that none of our readers will omit to read very carefully Dr. Benoit's letter concerning the judgment recently obtained against the College of Physicians and Surgeons of the Province of Quebec. Dr. Benoit has put the whole case so very clearly, quoting the law and the different amendments, that each reader may readily arrive at a pretty definite understanding of the position of the College in the eyes of the law in this province. It reveals a state of things most deplorable. Indeed, it is almost incredible that things should be as they are represented in Dr. Benoit's correspondence.

The medical profession is not more interested than the public in maintaining the highest possible standard of medical education. The public are year by year demanding higher culture and greater technical skill, and they are quite within their rights in so doing. Medical education is becoming more and more difficult and scientific. To-day it requires a well-trained mind, good natural ability, and constant application over a period of four or five years, to gain sufficient knowledge to pass the professional examinations of the better medical colleges.

The high standing of medical training is not promoted by lowering the matriculation examination, nor by allowing students to begin their professional studies before passing it. The regular course of medical study is quite sufficient to absorb all the energy of the student.

The regulations of the study of medicine in Canada is the result of years of experience in this and other countries, and the laws governing it should be respected. It is always unwise to have rules that are not enforced. To let a few students through the examinations, matriculation or professional, without requiring from them the same proficiency demanded of others is to sow seeds of discontent and ill-feeling. The Governors of the College of Physicians and Surgeons will, we feel sure, have the sympathy and loyal support of the profession in their endeavour to maintain the standards of the study of medicine in this Province as established by law, and to oppose the entrance into the profession of any student through other than the regular and legal portals.

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#### CANADIAN MEDICAL ASSOCIATION.

##### WINNIPEG MEETING, AUGUST 28TH TO 31ST, 1901.

The question now seems to be, how is one to make arrangements to get away at the time of the meeting, for it seems to be universally conceded that to attend the Winnipeg meeting is the proper thing to do. The railways, having granted a single return rate to the meeting, have assisted in breaking down one of the barriers, and now one hears from all sides of physicians intending to make Winnipeg the central point of their holiday trip, and Winnipeg is making preparations for a great gathering! Many physicians, it seems, will also take advantage of the offer of the single fare rate from Winnipeg to points in Manitoba, the Northwest, British Columbia and North Dakota, after they have enjoyed the hospitality of the Winnipeg profession.

The question of Dominion Registration will come up for a full discussion—it is hoped for the last time before this thing to be desired becomes a realization.

The following is a list of some of the papers already promised:—

The Address in Medicine—J. R. Jones, Winnipeg.

The Address in Surgery—O. M. Jones, Victoria.

The Address in Gynaecology—Thomas S. Cullen, Johns Hopkins, Baltimore.

The Early Diagnosis and Treatment of Pulmonary Tuberculosis—D. Gilbert Gordon, Toronto.

The Nose and Throat in General Practice—John Hunter, Toronto.

Remarks on some Interesting Diseases of the Age—G. H. Burnham, Toronto.

Orthopædic Treatment of Deformities and Disabilities Resulting from Paralysis—B. E. McKenzie, Toronto.

Title to be announced—D. J. Gibb-Wishart, Toronto.

A Practical Way of Distinguishing between the Human and Animal Blood—G. Silverthorne, Toronto.

Infectious Pneumonia—W. S. Muir, Truro, N.S.

Sclerotic Ovaries—A. L. Smith, Montreal.

Removal of Large Tumour from Os Uteri after Labour had set in—A. Armstrong, Arnprior.

Tuberculosis in Milk—Prof. Russell, University of Wisconsin.

The Present Outbreak of Smallpox in America—H. M. Bracken, Health Officer, Minnesota.

Hæmatology of the Blood—L. H. Warner, New York.

Skin Diseases—Lantern Demonstration—F. J. Shepherd, Montreal.

The Treatment of Consumption in Special Institutions—A. J. Richer, Montreal.

Disposal of Tuberculous Sputum—J. H. Elliott, Gravenhurst.

Title to be announced—G. Chambers, Toronto.

Chronic Ulceration of the Stomach Simulating Cancerous Disease—Relation of a Case of Gastro-enterostomy with Murphy Button—Recovery—J. F. W. Ross, Toronto.

Report of Cases Treated with the Hot Air Bath—W. H. Peplar, Toronto.

Title to be announced—J. H. Hutchison, Winnipeg.

Some Forms of Gastric Hyperacidity and Their Treatment—C. F. Martin, Montreal.

Syphilis as Seen by the Ophthalmic Surgeon—F. Buller, Montreal.

On the Necessity of a Better Recognition and Isolation of Trochomatous Patients in Canada—W. Gordon M. Byers, Montreal.

Title to be announced—J. L. Bray, Chatham, Ont.

Epidemic Cerebro-Spinal Meningitis—A History of Some Cases—James McKenty, Gretna, Man.

Pulmonary Tuberculosis, its Treatment and Prevention—A. P. Proctor, Kamloops, B.C.

Mild Smallpox—G. A. Kennedy, Macleod, Alta.

Title to be announced—C. J. Fagan, Victoria, B.C.

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#### THE ROCKEFELLER SCHOLARSHIPS.

In founding a series of scholarships for the study of medical science, John D. Rockefeller has shown a spirit of broad-mindedness that is in many ways most commendable, inasmuch as he has not confined these donations to his own country, but has included McGill University in the number of institutions benefitted thereby. And, too, he has

done an excellent thing in seeking not to further perpetuate his name in a pile of buildings that may too often lack funds for their perpetual maintenance, but to obtain the most immediate results by placing the funds in the hands of a committee to distribute among already existing laboratories. The scholarships are eight in number, seven of them being in American Universities, the eighth to McGill; and the income provided by Mr. Rockefeller has enabled the committee to obtain the services of one or more scientists at each place, whose work will be published in the name of the Rockefeller Scholarships from the laboratories of the respective colleges.

The appointment at Montreal has been given to Dr. William W. Ford, A.B., M.D., whose services are thereby secured for some time to come to McGill University. Dr. Ford is a most able young man, and has held for the past two years the Governors' Fellowship in Pathology, during which time he has published a large amount of valuable work, chiefly upon bacteriological subjects. Indeed, at the present time there is, perhaps, no one in America as thoroughly versed, as is Dr. Ford, upon the subject of intestinal bacteria, for during the last year he has been engaged upon a work of considerable magnitude dealing with this subject.

The University, therefore, is to be congratulated upon being able to retain his services and to secure a continuation of this work in the laboratories. Had it not been for the new endowment, it is probable that Dr. Ford, having completed the tenure of his Fellowship, would have severed his connection with McGill University.

Dr. Ford is an Ohioan, who was educated at Adelbert College, Western Reserve University, Cleveland, graduating as A.B. in 1893, and at Johns Hopkins University, Baltimore, receiving his degree of M.D. in 1898. Subsequent to this he was house-surgeon in the Robert Garrett Hospital for Children, Mt. Airy, Maryland, and was later on the Interne Staff of the Johns Hopkins Hospital, Baltimore, which position he left to accept the Governors' Fellowship at McGill.

Dr. Ford sailed in July by the "Oceanic" for Liverpool, where he will remain for a short time in one of the laboratories, after which he goes to Paris to the Pasteur Institute, where he proposes to spend some considerable time in study and research. Next spring he will resume his work in the Pathological Laboratory at McGill under Professor Adami, continuing the line of investigation he will undertake while at Paris.



## Proceedings of the McGill Medical Society of Undergraduates.

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### DIAGNOSIS AND TREATMENT OF OSTEOMYELITIS.

BY

E. G. MASON.

To read an elaborate paper on the "Diagnosis and Treatment of Osteomyelitis," or even one covering it fairly well, would take up far more time than could be spared at this meeting, I will, therefore, deal with the principal forms of the disease only.

Speaking of the disease as a whole, it is the result of an infection from one of the pyogenic organisms, either the streptococcus or the staphylococcus. The disease is usually started by some slight injury, particularly in children previously debilitated by the infectious fevers. However, cold, traumatism and over-exertion are frequent exciting causes, and it may follow typhoid fever.

The disease may be divided into:—(1) Acute osteomyelitis; (2) Chronic osteomyelitis, and I think I may say (3) Tuberculous osteomyelitis.

*Acute osteomyelitis* is an acute suppurative inflammation of the medulla of the bone. As a result of this acute inflammation in the medulla of the bone, that part becomes greatly congested, fluid is poured out, fills up the cancellous spaces and Haversian canals, and subsequently accumulates under the periosteum. The medulla very quickly becomes infiltrated with pus, the periosteum thickened and swollen, with pus beneath it. The suppuration under the periosteum may result without any communication with the medulla, or in some cases only after the bone is softened at some part, and communication thus established.

*Diagnosis:*—This must depend on the symptoms and the history of the patient. Usually, the first symptom to be noticed is a chill followed by a severe pain in the affected part, sometimes by redness, fluctuation and severe constitutional disturbances with a high temperature. A mild case may be attended by very slight symptoms and proceed to recovery. When the suppurative form is present, however, there may be a prominence over the affected area or a fungous abscess into which the probe readily sinks deeply. Periostitis, which is invariably present, may mask the true nature of the case. There may be violent fevers with great pain in the first instance. The fever soon

passes into the typhoid type, being accompanied by a rapid, small pulse, headache, thirst, and dryness of tongue, and stupor or delirium, so that the disease is often at this stage mistaken for typhoid or meningitis. The pain is generally intense and if the bone is superficial swelling is soon apparent over it, the skin also becoming red or livid. In the course of a few days fluctuation becomes evident and on incision pus escapes, the bone is felt to be bare in parts, while in others, while not actually bare, the periosteum peels off very readily.

Where the bone is more deeply seated or where the process is confined to the medulla, the swelling and redness may not appear so early, but in any case the pain is extremely severe so long as the patient is sufficiently conscious to refer to it. In young children it is discovered accidentally. In these the disease may traverse the epiphyseal cartilage and affect the neighbouring joint, though not necessarily suppurating. In cases where the patient is in a state of stupor, he does not call any special attention to the part, which makes diagnosis extremely difficult in such cases. In severe cases the symptoms are very grave indeed and may end in death in two or three days from rapid septicæmia, while in others the patient may survive and die subsequently of pyæmia, septicæmia, ulcerative endocarditis, or exhaustion.

Some very interesting figures concerning the occurrence of the disease, are given by Haaga in *Beit. zur. klin. chir.* for 1890. He made a study of 403 cases of acute osteomyelitis and found that the proportion of occurrence was 3.38 males to one female. Moreover, he found that 42 per cent. of these cases were between the ages of 13 and 17; below the age of 6, the percentage was much below this, and above 19 years there was almost an extinction of cases. He further demonstrated that 3-5 of all the cases occurred in the long cylindrical bones, more frequently the tibia and femur. In the tibia the disease occurred in the centre of the shaft more frequently than in any other part of the bone, while in the femur it more often attacked the lower third.

In addition to the foregoing he showed that 20 per cent. of all cases were multiple, and in 189 of the entire number more or less aggravated disturbances of the adjacent articulations remained.

Trélat in *La Tribune Médical* for March, 1891, says:—"Osteomyelitis may appear during adult life, though without doubt much less frequently than in infancy or adolescence. With adults the affection may be chronic from the first, beginning insidiously and progressing slowly.

The only diseases likely to be confused with this are: (1) typhoid fever; (2) acute rheumatism; (3) a deep-seated abscess; (4) tubercular or syphilitic disease in infancy.

In the first instance, that of typhoid fever, difficulty will only be experienced in very acute cases, where the rapid poisoning of the patient prevents his giving an account of his symptoms, and in young children who cannot tell what ails them.

In these cases, where the symptoms set in so rapidly and acutely one should suspect a septicæmic condition rather than a specific fever such as typhoid. And in all suspicious cases one ought to feel all over the body, especially the bones usually affected, to see whether pain is caused or not. If the child winces, a local cause is at once manifest. In osteomyelitis also, the pressure of the bone in an upward direction, such as tapping on the feet in osteomyelitis of the tibia or femur, causes pain.

With regard to acute rheumatism, the symptoms are more general,—a number of joints affected and the general condition of the patient not so bad as in osteomyelitis. The temperature is not so high, nor does the patient pass into the typhoid state. A deep seated abscess rarely gives rise to any difficulty. It does not usually produce the violent constitutional symptoms, especially the typhoid state, of acute osteomyelitis. When the abscess is in the leg, tapping of the foot will not usually increase the pain unless the inflamed part is touched or moved.

According to Wiener in *Klin. Woch.* for 1897:—"Diagnosis is to be made between osteomyelitis in infancy and tubercular or syphilitic disease. He considers the following features as conclusively diagnostic of osteomyelitis:—1. The multiplicity of foci in the bone; 2. The frequency of the separation of the epiphysis; 3. The frequent involvement of the joint; 4. The acute course of the disease.

Necrosis of bone follows acute osteomyelitis and the presence of sequestra may be diagnosed by the following symptoms:—A previous history of acute illness followed by the formation of an abscess in a few days. This may be drained by an incision by a surgeon and subsequently by sinuses which remain open for years. The granulations around the opening are generally prominent. The bone itself at the seat of the necrosis is very much thickened and the tissues are adherent to the periosteum. On introducing the probe one feels bare bone, which may or may not move according to the size and shape of the sequestrum and of the cavity in which it lies.

Whether the dead piece is felt to move or not, if we have the acute history, and if a period of at least six months has elapsed since the onset of the trouble, we may be pretty sure that the dead piece has become separated. Even though we may not be able to find bare bone, it is certain to be there under the circumstances mentioned, and failure



to find it simply means that the sinus is tortuous or that the opening in the new case is too small to admit the probe.

*Treatment.*—The treatment must be considered (1) according to the stage of the disease and the part of the bone which is more especially affected; (2) according to the presence or absence of suppuration in the neighbouring joints; (3) according to whether it has followed an open wound or not, and (4) according to other complications which may coexist.

The treatment of acute osteomyelitis consists in freely opening up the medullary cavity and clearing out all the pus and medullary tissue. As soon as the diagnosis is made out, a free incision should be made down to the bone, the periosteum turned to one side, and with a chisel and hammer the dense shell of the bone cut away till the medullary cavity has been well opened up and all the soft material thoroughly scraped out. The incision in the bone must be extended until the whole affected area of bone has been exposed; but in cases where the whole diaphysis is affected, it may be more convenient to make several openings in the bone, and to scrape out the cavity between them, rather than make one large gutter. Seeing, however, that a large portion of the bone will probably die, there is no particular harm in gouging away a large amount, for one may actually remove the whole of the necrosed portion in this way.

After having thoroughly cleaned out the whole of the medullary cavity it should be sponged with undiluted carbolic acid and a drainage tube inserted. A little cyanide gauze may also be introduced between the edges of the wound and between the drainage-tubes so as to prevent closure of the wound in the first instance. The limb should be placed on a splint. If after three or four days it is found that the wound is aseptic, the stuffing may be left out and only one or two drainage tubes retained at the angles of the wound, the rest being stitched up.

In cases where the whole diaphysis is dead and separated at the epiphyseal line, it may be removed, the periosteum being left intact; and under any circumstances a certain amount of bone formation may occur from the detached periosteum, sufficient sometimes, where there are two parallel bones, to give stability to the limb. If a sufficient amount of bone does not develop, bone-grafting must subsequently be employed, but this cannot be carried out unless the wound is aseptic. In most cases it is best to delay bone-grafting until the wound has quite healed, and then subsequently to open up the parts again with the view of introducing the grafts.

There is a tendency of the neighboring joints to become stiff as the result of inflammation in the joints themselves leading to adhesions and



obliteration of portions of the synovial capsule, or from inflammatory exudations around the joint, giving rise to fibrous adhesions around it and of adhesions of tendons to the bone. With the view of avoiding these troubles, the splint should not be continued too long, and after two or three weeks, massage and passive motion of the neighbouring joints and muscles should be carried out. In the case of the lower extremity it is well to keep the patient in bed so long as there is a prospect of the wound healing; but if it is evident that a sequestrum is present there is no particular object in keeping him in bed, and his strength will be better maintained by allowing him to get about. As regards the upper extremity, of course, the patient need not be kept in bed at all after the fever subsides.

In the case of acute epiphysitis which especially occurs in children, the epiphyseal cartilage is very apt to be completely destroyed and as a result no further growth of bone takes place, thus very material shortening of the limb may result as the patient grows up. The treatment is the same as other cases of acute osteomyelitis.

Where we have acute suppurative osteomyelitis with suppuration of neighbouring joints we have to deal with a very serious condition and one which often ends fatally. These are usually cases of acute epiphysitis. Under such circumstances the first thing that one thinks of is the advisability of amputation and in most cases if the patient is seen before his condition has become hopeless, amputation through the bone above is the best treatment. In some cases, however, where the symptoms are not so severe one may be content with opening up the medulla as already described and in addition making free incisions into the joint so as to expose thoroughly and evacuate every recess, subsequently drawing the joint for a time, and if necessary employing constant irrigation.

As regards acute suppurative osteomyelitis and periostitis resulting from an open wound, we meet with this at all ages, and the age of the patient is of very great importance in determining the method of treatment. Under these conditions the organisms at once spread into and along the medulla and under the periosteum with great rapidity, and lead almost certainly, in the case of an amputation stump to complete necrosis of the lower end of the stump and very often to the formation of sequestra higher up. This condition is also extremely apt to be accompanied with pyæmia, and in the case of a stump the piece of bone which is left is very often not worth saving, at any rate not worth risking the patient's life to save. Hence the proper procedure in acute necrosis following amputation wounds seems to be early amputation through the joint above.

In case of compound fractures where osteomyelitis has set in, unless the condition is very limited, amputation is usually the best practice; but in some cases where the disease is quite limited and the patient young, one may delay and wait for the separation of sequestra, and in this way get a satisfactory limb.

In the treatment of bone necrosis, during the period which intervenes between the attack of acute illness and the separation of the sequestrum, there is no object in any surgical interference for if one cuts down at that time, it is difficult to be certain how much of the bone is dead and where the point of contact of the dead and the living is. Therefore up to the time when the bone has become separated by natural processes, all that one needs to do is to apply antiseptic ointments to the orifice of the sinuses and see that proper escape of the discharge is provided. When a suitable time for operation has arrived the first point for consideration is how we can get as free access to the dead bone as possible; and if the sinuses are situated in parts where, on account of the presence of nerves, vessels, etc., we cannot make a free enough opening, we should disregard the sinuses altogether and cut down on some other part of the bone where the anatomical arrangements are more favorable. The incision in the skin should be coextensive with the thickening of the bone, because it is absolutely essential that the whole cavity in which the bone lies should be freely opened up both with the view of making certain that the whole fragment is removed and also of providing proper escape of the discharge afterwards and of obtaining proper closure of the cavity. The skin and tissues should be freely divided, the periosteum detached laterally over the thickened area, so as to give free access and then with a chisel and hammer one proceeds to chisel away the bone till one reaches the cavity where the sequestrum is present.

Where the patient is weakly it is in most cases advisable to apply a tourniquet before the operation, both with the view of preventing unnecessary loss of blood and also with the view of being able to disinfect the cavity thoroughly afterwards. Having reached the cavity in the bone it should be opened up completely from end to end and from side to side till the sequestrum can be lifted out without trouble. Having removed the sequestrum and thoroughly scraped out all granulation tissue, one should also dissect out the sinuses which lead to the diseased bone and then proceed to disinfect the parts in the hope of obtaining asepsis. The part should be thoroughly sponged with undiluted carbolic acid and after this has acted for a few minutes the cavity should be tightly packed with gauze sprinkled with iodoform. The tourniquet can then be relaxed and any superficial vessels which

spout can be tied and the rest of the wound filled up with packing. An antiseptic dressing is applied outside and in many cases one in this way succeeds in rendering the wound aseptic.

In the after treatment an important point is to decide what is to be done with the large cavity left behind.

If the septic condition is not eradicated the stuffing can be taken out in two or three days and the best thing to do then is to stitch together the skin incisions with the exception of an opening at one end through which a large drainage tube passes into the cavity. When we find on dressing the wound after three or four days that there is no suppuration whatever, the stuffing should be completely removed and an attempt may be made to fill up the cavity with material which will become organized, either the bloodclot alone, or catgut, or decalcified bonechips.

Of these methods the best is bonegrafting by means of decalcified bone chips. These bone chips are decalcified and kept in a solution of corrosive sublimate in alcohol. The cavity is filled up with bone chips, a little bleeding is induced so that the intervals between the chips become filled with blood-clot and then the periosteum, if possible, is brought together, a stitch or two put in between the muscles, and the skin wound closed. A drainage-tube is not usually required unless excessive bleeding is present, in which case a few strands of catgut brought out at the lower end of the wound will allow the superfluous blood to escape. The wound is then covered with an antiseptic dressing and the part placed at rest on a splint.

*Chronic osteomyelitis* is inflammation of a more chronic type affecting the medulla and adjacent dense bone. This condition may follow the acute, but more usually it is chronic from the first.

In chronic osteomyelitis the result is either softening of the bone, "rarefying osteitis" or condensation of the bone "condensing osteitis" or a localized abscess in the bone "Brodie's Abscess." In some rare cases referred to by Sir James Paget under the name of "quiet necrosis" a sequestrum has been found without any signs of its presence.

The diagnosis depends on the symptoms and etiology.

We may have a history of previous injury or some constitutional condition such as rheumatism, or it may occur under circumstances which we do not exactly understand. As regards the symptoms we have a marked thickening of the bone in the region of the disease, some tenderness over the inflamed part, generally acute at certain points. There is often a great deal of pain which is worse when the limb becomes warm and more especially when the patient is in bed at night. The pain is more marked than the tenderness and is of a neuralgic and throbbing character, while the converse is the case in chronic periostitis.



The symptoms may subside at times and again get worse, the course being marked by exacerbations and remissions; sometimes even for months the patient may become comparatively free from pain and then again suffer from a severe attack.

In cases of "Brodie's Abscess" of bone, the disease is generally in the neighborhood of the epiphysis, characterized by marked enlargement of the part with very intense pain especially at night; there is generally a tender spot somewhere or other. Sometimes where the disease has lasted long and the bone become softened, we may also find a soft spot.

The treatment is either palliative or radical.

The former consists in rest to the part, elevation; counter-irritation in the form of either blisters or the actual cautery, especially Corrigan's Cautery, and the administration of drugs internally, of which are potassium iodide and salicin or sodium salicylate. The iodide in large doses seems to relieve the pain in some cases very markedly. The result of this palliative treatment is usually, however, only temporary, and it is but seldom that a cure results even though the treatment be continued for many months. As a rule the patient's condition improves for a time and may keep pretty well while taking large doses of iodide, but if he stops this and begins to walk about, the old symptoms are apt to occur. Hence in cases where a fair trial has been given to palliative measures without much benefit, it is advisable to propose an operation.

The operative procedures consist in cutting down on the inflamed part and removing as far as possible the whole of the thickened and inflamed periosteum, gouging away a large portion of the thickened bone, and looking for the presence of an abscess, sequestrum or other cause. Strict asepsis is imperative. If an abscess cavity is found it should be thoroughly opened up, as described in speaking of sequestra. It is well to sponge out the cavity with undiluted carbolic acid, then suture closely the opening and endeavor to get healing by first intention. With the view of getting a better scar, one should use curved incisions, turning aside a flap, rather than a straight incision over the centre of the inflamed area. Afterwards the limb should be put in a splint for two or three weeks, because the cavity in the bone fills with blood-clot which must become organized. In cases where inflammation is at some distance from a joint, this splint may be continued even longer. When a splint is left off, the patient should still be kept in bed, if it is the lower extremity which is the seat of the disease, for six weeks or a couple of months so as to allow the new tissue to become thoroughly firm. If the patient gets up too early, the young vessels in



the organising blood-clot give way, hæmorrhage takes place, and the process of organization is apt to be arrested. Massage and passive movement should be kept up from an early period after the operation.

Tuberculous osteomyelitis is a condition in which the medullary tissue of the bone becomes infiltrated with tuberculous material. This condition especially affects the shorter long bones such as the phalanges and the metacarpals. In the fingers it is known as "Strumous dactylitis." It is also the most common form of tuberculosis in the small cancellous bones such as the tarsals.

The symptoms are very characteristic. The patient is almost always a child; very often several bones are affected and the enlargement of the bone is of a spindle-shaped character. In the early stage there is no softening or pain and later on the presence of an abscess adds to the certainty of diagnosis. In this case the only difficulty will arise in connection with hereditary syphilis, because in syphilis, one meets with a somewhat similar condition. There, however, the condition arises usually in infancy, other symptoms of syphilis are present, and abscess formation does not occur. In the case of tuberculous osteomyelitis of cancellous bone, such as the tarsal bones, beyond the feeling of uneasiness and aching in the early stages the patient does not usually notice anything till the disease has attacked the neighboring joints.

The treatment of tuberculous osteomyelitis is:—

Careful rest and pressure, and good hygienic conditions should be persevered in for a very considerable time. Operation is hardly necessary in these cases unless there are signs of abscess formation outside the bone. The operation consists in clearing out the disease and thorough disinfection of the cavity by sponging out with undiluted carbolic acid. The wound may then be stitched up without drainage. If, however, there is much oozing it is well to introduce at one angle of the wound for two or three days either a small drainage tube or a few strands of horse-hair or catgut so as to allow the blood to escape. It is well to place the part in a splint.

In the case of tuberculous osteomyelitis of the small cancellous bones, such as tarsals, the best result is obtained by excising the affected bone completely. As a rule if only one bone is taken away, the result is extremely satisfactory as regards the usefulness of the foot. In after years, in the case of the cuneiforms more especially, one is often unable to tell that anything had been removed from the foot.

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## Original Communications.

### MEDICAL NOTES OF A TRIP TO CUBA.

BY

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Last Autumn Sir William Van Horne asked me to accompany him on a trip to Cuba, promising me that I should see Cuba in all its phases. We left Philadelphia on November 8th and reached Santiago on the 12th. Santiago we found to be quite a model town owing to the wise rule of General Wood. The town is an example to all towns in this or other countries, for, from being the pest-hole of the West Indies it has become a sanatorium. Drains have been made and streets covered with asphalt, a sanitary corps keeps the streets clean, men pushing small waggons pick up every scrap of dirt, and every hour or so the sanitary carts come along and carry off the collections. This, however, is not done at the expense of the City but funds are derived, I believe, from the Customs duties.

Yellow fever has been entirely abolished, no case has occurred for over 18 months and if the mosquito theory of the transmission of the Yellow fever is true, no case can originate there and if yellow fever is seen in the future it will be due to importation. The Santiago Province protects itself by quarantine from Havana where yellow fever exists all the year round.

I think it has been now proved beyond doubt by the experiments of Drs. Walter Reed, Carroll and Agramonte, that the mosquito is the carrier of the Fever parasite. It seems that the parasite of the disease, as in malaria, undergoes a definite cycle of development in the body of the mosquito before the latter is capable of conveying infection. This period appears to be not less than 12 days. A number of soldiers, doctors and others, submitted to the test of being bitten by mosquitos who had already fed on yellow fever patients, and 85.71 per cent. were

infected, their inoculation period being 2 to 6 days. This discovery is important for quarantine is only useful in Southern ports where this kind of mosquito exists and disinfection of clothing and bedding is a work of supererogation.

The name of the mosquito is the *Culex fasciatus*, and the houses in Santiago which have been regarded as centres of infection for Yellow Fever (and were destroyed by General Wood), were only so because they harbored this dangerous insect. To abolish yellow fever it is important to prevent the mosquito biting the yellow fever patient, and of course to destroy the mosquito, a procedure not characterised by any great degree of simplicity, in fact, rather a 'big contract.' If yellow fever cases can be successfully protected from the mosquito by wire screens, etc., then the mosquitos having no more patients to bite won't be able to manufacture the parasite all by themselves—in fact it needs a combination of mosquito and patient to do this. The excreta of the patient have no power of conveying the disease. Dr. Finlay of Havana long ago asserted that mosquitos spread this disease and he made experiments to prove his case.

The number of deaths from yellow fever in Havana in 1900 was 310, in 1896 1,282 died of this disease which only attacks foreigners, natives being, it is said, immune. Dr. Guiteras of Havana, however, says that the reason yellow fever persists so constantly is that many very mild cases occur amongst native Cubans and colored people, and that these cases are not recognized as yellow fever but thought to be malaria or other diseases. The foreigners attacked were Americans and Spaniards. But I have wandered away from Santiago.

The temperature varies little all the year round. It is perpetual summer in Cuba, the winter months being only a few degrees cooler than the summer, 80° to 90°, the average temperature, and the air is charged with moisture which makes exertion in the heat of the day unpleasant. Santiago is situated at the foot of a beautiful bay and encircled by high hills (2,000 to 3,000 ft.). There is a lower and an upper part of the town; in the upper part on a high ridge is situated the General Hospital containing 300 beds, under the charge of Dr. Castillo and his assistants. Dr. Castillo is a brother of the Governor of Santiago Province and was a prominent man during the Revolution and did much for the cause of liberty in Cuba. He is a man of remarkably fine presence and of brilliant abilities. He was educated in the United States and for a time was a surgeon in the American Navy and accompanied one of the Search Expeditions to the North Pole as surgeon. When the Americans took Santiago he was with them, and on the epidemic of typhoid and yellow fever breaking out, this hospital which had been a Spanish military hospital, was made use of.



But as it was thought to be so infected with yellow fever as to be dangerous to Americans it was handed over by General Wood to Dr. Castillo to be used as a general hospital for natives who have practically all negro blood in their veins, and hence are immune to yellow fever.

The place is arranged in large pavilions round a central square containing beautiful trees and flowering shrubs. In this part of the country all the buildings are of one story and this hospital is no exception to the rule; there are no problems of ventilation and heating to wrestle with, everything is built for summer. The hospital is clean and well managed and much good work is done. Dr. Castillo has lately had several successful cases of extirpation of the uterus of which I saw two rapidly recovering. He has collected money enough to build a steam laundry and expects to light the place with electricity when he gets his plant for the laundry. He has also nearly completed a very good children's hospital, the money for which he himself collected.

I saw some cases of malaria there, all apparently originating outside the city and I am told by Cuban medical men that besides the ordinary malaria there is a pernicious type somewhat like the 'Black water Fever' of Africa, also there are occasional cases of typhoid though these are not numerous. There is a fever seen not infrequently in Cuba which is not malaria, because it does not yield to quinine, nor are organisms of malaria in the blood, nor yet is it typhoid for the blood does not react to any typhoid test. It is characterised by high temperature and great prostration and but little seems to be known about it. A systematic investigation is needed to determine its nature.

Whilst at Santiago Dr. Castillo asked me to perform some operations. The first case I operated on was one of obstruction of the bowels which had lasted four days and was most interesting because it turned out to be a case of pro-peritoneal hernia with gangrenous bowel. I had to resect about a foot and a-half of the intestine. The man stood the operation well and when I left was progressing favorably. Another case was an enormous osteo-sarcoma of the lower jaw in a woman, from whom I removed the greater part of the lower jaw. In this, as I always do in tumours of the neck, I freed the lower part first, securing the blood vessels, and then found no difficulty in disarticulating the jaw and removing the growth and it together. Patients in Cuba seem to stand operations fairly well, though, probably owing to the poor food they consume, do not stand loss of blood well. The operating room was well equipped and well lighted, quite modern in every way and besides this it is fly and dust proof.

There are quite a number of lepers in Santiago, some 300 I was told, and I saw several in the streets. There is a small house attached to the hospital which has four lepers in it, all early cases. I visited the



Leper Hospital in Havana and was most interested therein. It is called "Casa Hospital de San Lazaro," and was founded in 1681, by Don Pedro Alegre. The present building and foundation dates from 1823 and although it gets grants from the Government and the City still it is chiefly supported by bequests and donations. As one goes into the front doorway one finds oneself in the portico of a large church. This part is free to the public. On entering the church one sees on each side of the chancel transepts separated from the church by a high iron railing in which the lepers sit and attend service and also at the same time can see their friends who come to the church. The women are on one side and the men on the other. The hospital, the pavilions of which are around a large court, contains 100 patients in all stages of the disease. The ones upstairs are the far advanced cases and confined to their beds, helpless, blind and maimed people, whose sad state makes one shudder to see and whose only hope is a speedy death. The corridors on the ground floor are peopled by lepers who can move about, they eat in a common dining room and seem moderately happy. I saw many of the comparatively early cases, chiefly of the anæsthetic tubercular variety. The medical head of the hospital I did not see, Dr. Manuel Alfonzo, but everything seemed in perfect order and very clean. The nursing department is in charge of a community of nuns who also look after the feeding of patients and dispensing. I was taken about by the Mother Superior and a Sister. The Sister was a charming woman, bright and talkative, and hailed from Limerick, Ireland, she told me that up to the time the Americans came she had not spoken English for 20 years, and had almost forgotten how to speak it; she had, however, preserved intact a very rich Irish brogue which was delightful to hear in Cuba. She informed me that since the nuns had charge not one of them had ever contracted leprosy nor had any of the assistants, although they had been in charge for over 75 years. In her experience several cases had been discharged cured, Chaulmugra oil being the great remedy.

I took several photographs of the lepers and they seemed rather to like it than otherwise. There was one native American patient, he had been living for years in Cuba and contracted the disease in Porto Principe. It is said the Government of General Wood in the near future intends to remove the lepers to an adjacent island. The patients themselves object because they will not be able to see their friends. At present patients cannot be compelled to go to a hospital and their entry is purely voluntary, but once they enter are not allowed to leave. There seems to be a general impression in Cuba that fish eating has something to do with the production of the disease, this is also the opinion of Mr. Johnathan Hutchison.

I was much interested, while in Havana, in the hospitals there. One large public hospital in the outskirts is being remodelled and a considerable amount of money is being spent by the Government to make the wards and equipment the most modern. This includes a steam laundry, an electric light plant and a most modern up-to-date operating room. The nursing is in charge of American ladies who are endeavoring to train Cuban girls as nurses. As the hospital was undergoing extensive alterations, I did not see it under very favorable auspices, but what I saw impressed me greatly. I saw an abdominal operation in which every modern aseptic precaution was taken.

There is also another hospital. No. 1, which was occupied by Spanish soldiers during the war. It consists of a number of detached wooden pavilions connected by galleries. It can be made to accommodate 3,000 patients. American nurses reign here also and everything was clean and in perfect order. The operating room was modern, especially as regards gynæcology. The Yellow Fever Hospital I did not visit.

Dr. Fernandez, the president of the Pan-American Medical Congress which met recently in Havana, spent a day taking me about. We visited the Medical School, which consists chiefly of class rooms and a dental department which was well-equipped with modern dental chairs. The dissecting room was small and contained only a very few tables on which there were a couple of subjects. At the time I was there there was no dissecting going on by the students, but some of the demonstrators were hard at work making some very beautiful preparations of the foot and knee. I also visited with Dr. Fernandez a large building on the university grounds which has recently been handed over to the Medical Faculty for Laboratories: there was a fine histological laboratory in the process of equipment but I saw but little provision, beyond rooms, for physiology, chemistry or pathology. Museums were conspicuous by their absence.

In the hospitals there were no arrangements by which students could see operations and I could not gather that there was any special clinical teaching. Dr. Fernandez is one of the most progressive of men. He has a large laboratory and library at the top of his house, he has skilled men trained in Pasteur's laboratory, continually experimenting, making antitoxines for diphtheria and tetanus and examining pathological specimens. He keeps four horses below stairs from which he gets the serum, all the horses looked in perfect condition, one especially which he has had for two or three years and from whom some hundreds of quarts of blood have been drawn, is especially lively and healthy. Dr. Fernandez did all this at his own expense and at first gave all his antitoxine away, but now he charges for it at cost; his laboratory is made much use of by the practitioners in Havana. He has an immense

medical library and is the Editor of "The Cronica Medico-Quirurgica de la Habana." Dr. D. J. Santos Fernandez, is the most prominent ophthalmic surgeon in Cuba.

I visited also two private Spanish hospitals, one conducted by the Association de Dependientes del Comercio de la Habana. This Society has a magnificent hospital in beautiful grounds called the "Quinta de Salud la Purisima Concepcion." The hospital consists of separate buildings, a large administration building, a large building containing a complete hydropathic establishment hot and cold water in every form and hot air and steam baths with all kinds of douches, which are managed by the director from a kind of pulpit; separate buildings for males and females and a very fine new operating theatre. This Society is very wealthy and has been in existence for years. It started first as a cottage hospital as its name 'Quinta' implies, and soon it grew larger and larger until it reached its present size. Each member pays \$1.50 a month, or \$18.00 a year, and as there are 13,000 members, their income is about \$234,000 a year. They have a surgeon-in-chief and physician-in-chief who are each paid \$3,000 or \$4,000 a year, and their assistants in proportion. Each member of the Association is entitled to a private ward and free medical and surgical attendance when ill. He can have his own doctor in preference to the regular surgeon or physician of the establishment. He can recommend anyone to this hospital to one bed. Although there are some 200 beds, when I visited the place there were only 50 patients actually being treated.

I visited another similar institution kept up entirely by natives of Asturias in Spain. This was not so modern as the one I have just described but has most charming grounds with a wonderful collection of tropical trees about it and lovely gardens. It has occurred to me that such a society for the establishment of an infectious hospital would be of advantage here. Let each member pay a stated sum into the society yearly, this would entitle him to one bed for himself or any member of his household. A membership of say 2,000 at \$10 per annum would give \$20,000 a year, for which a moderately sized hospital could be run. It would be like an insurance against infectious disease and when such diseases did come to us we could send members of our family to a place which would be modern, scientific, properly managed and comfortable. In every town in Cuba these Spanish private hospitals exist.

Another institution I visited was the Foundling Hospital (Maternidad). A very old foundation and apparently very well managed. It is of huge size. There is a turnstile containing a basket in which infants are deposited from the street; on passing through the opening the basket strikes a series of bells, the noise of which arouses the nun



on duty. She takes in the waif. They keep the clothes and trinkets found on the babies in a huge glass case for future identification. Some of the clothes were beautifully worked, and some of the trinkets valuable. The foundling remains in the institution until they learn a trade. The boys learn printing, carpentering, shoe-making, etc., and the girls are trained in house work for servants. The place is under the charge of a community of nuns. The inmates all appeared very happy, and were of all colors—no color line there being tolerated. I was treated most courteously and shown everything. In one case are a number of photographs of former inmates who have been successful in life. Many of these I was told became benefactors of the institution.

Tuberculosis is very prevalent in Cuba, and among the colored races is very fatal. This is strange, for the inhabitants practically live in the open air. Of course, when colored races mix with white their powers of resistance to disease seem to be lessened. The people wear little clothing, and in the country children up to 10 or 12 years of age go naked. Babies, even of the better classes, never wear clothes. The lower classes live in huts made from the palm tree, the roof is formed from the leaves, the sides from the trunk, and the bark is used to divide the rooms and fill up the crevices. Doors and windows are usually mere openings closed with mats. The people sleep usually in hammocks.

Although perhaps the best tobacco in the world is grown in Cuba, many of the better classes do not use it. In several of the tobacco factories I visited the proprietors did not smoke. Smoking, however, is very prevalent among the lower classes. They raise their own tobacco and make their own cigarettes and cigars. Women smoke as much as men, and it is no uncommon sight to see a procession of women with baskets or water jars on their heads, and in the mouth of each one a huge black cigar and clouds of smoke obscuring their swarthy countenances. It seems to agree with them, for they all look well and happy.

In a town in the centre of Cuba one of my friends got ill, with what, I know not. He had severe headache, vomiting, backache and a very high temperature. I saw him and advised him to get a local doctor, as I was not acquainted with the tropical fevers. My friend, who had spent some 20 years in the tropics, was sure he had yellow fever, as he had seen many cases. The local doctor examined him carefully, and after examining the urine, said it was not yellow fever, but could not say what it was. They rest their diagnosis of yellow fever entirely on the fact of there being albumin in the urine. As he was in an uncomfortable hotel, I went to the Spanish private hospital, became a subscriber and arranged for my friend to have a private ward. But before removing him I had to have the doctor of the hospital see him



and the two had a consultation which lasted some 30 or 40 minutes, and was held in voluble Spanish over the bedside of my friend, who understood and spoke Spanish perfectly. During the consultation innumerable cigarettes were consumed, and the patient was surrounded by a halo of smoke.

After a time the consultation was transferred to the next room, and my friend told me that the hospital doctor said that he had yellow fever, but the other held to his first opinion. Having the carriage at the door, I called to one of the doctors, who spoke French, and said I was going to take my friend to the hospital whatever the disease was. They submitted to my decision with Spanish politeness (for a Spaniard would rather be accused of murder than impoliteness), and I took my friend to the hospital, where the doctors fought out the diagnosis for several days; in fact, until my friend was out of danger, as they said if he lived over the fifth day it is not yellow fever. My friend told me that whatever they considered the disease to be they were treating him for yellow fever, and the treatment is very simple,—purge in the morning, again at noon, and again at night, and do the same next day. My friend recovered in ten days, and to this day no one knows positively what disease he suffered from.

Apparently, as the diagnosis of yellow fever in Cuba depends entirely upon the presence or absence of albumin in the urine, many mistakes occur, for it is well known that numbers of cases of yellow fever have no albumin in the urine. Again, many cases of yellow fever are, I believe, so mild that they are unrecognisable. The doctors in Cuba, except in Havana, do not seem alive to the blood examination in malaria and typhoid fever, if they used this oftener they would, I believe, exclude more cases of so called yellow fever.

Havana is a beautiful city, but still undrained, but they are now undertaking a huge system of drainage and paving, which will, it is said, when completed, make Havana a veritable sanatorium.

Cuba is a wonderful country for the raising of all forms of food. Before the war good beef could easily be got very cheaply, and immense herds fattened on the rich guinea and parana grass, which grows so luxuriantly in the province of Santiago. As a rule, the cows give but little milk, and butter is not made in any quantity; the feed goes to beef, not milk. Imported butter in tins is used everywhere, and also tinned cream and condensed milk. Oleo-margarine is very popular because it never gets tainted. In the hospitals all the milk I saw was boiled immediately on receipt; they do not seem to have yet introduced Pasteurisation. I several times had my attention drawn to the thick yellow crust which formed on the boiled milk, and which was pronounced beautiful cream. All kinds of fruits are most abundant,

oranges, limes, grape fruit, custard apples, alligator pears, bananas and plantains, sapodillos, mangoes, etc., and many other kinds the names of which I forget.

Cocoa-nut water is much recommended as a diuretic. It is only used when clear and limpid in the green cocoa-nut. Bananas are never eaten raw, always roasted or boiled, taking the place of bread. Sweet potatoes grow well, but the Yuca root is the favorite substitute for the potatoe. It is these roots from which tapioca is made. It struck me as very curious that so much pork and ham was eaten in such a hot climate but every hut has its quota of pigs. These are of the razor-back variety, and are semi-transposed at certain seasons of the year; however, when the nuts of the Royal palm are ripe and ready to fall, the pigs congregate about the trunks of these trees, which are of large size and very numerous, and open their mouths and wait for the nuts to fall into them. They now get very fat, and are soon ready for killing. Pigs fed on these nuts make most delicious pork and very sweet hams.

There are many wild pigs on the island, probably imported. Also deer, guinea-fowl and pigeons; there are few native animals, no monkeys, and what is very fortunate, no poisonous snakes. One snake, the Ma La, grows to some 15 feet in length, but is harmless, and is tamed as a house pet to kill rats. There are a few scorpions and tarantulas, the latter only of which I saw when I looked for them; they rarely attack you unless irritated. All the rivers abound in Caymans (a kind of crocodile), and when going in swimming one has to employ small boys to throw stones to keep these creatures away. They are not very wicked, but are said to be fond of dogs and pigs. In all the bays sharks abound.

Amongst the curious things I saw in Cuba were lobsters without claws and oysters growing on trees. Both were favorite articles of diet. Shrimps also were very good, and also guava jelly, which is eaten with cheese at every meal. Every small landed proprietor raises everything he wants to eat, such as bananas, Yuca root, oranges, coffee and sugar canes and pigs. He can raise several crops a year and support a family on an acre or two. Hence, where living is so easily got, the people are very apt to be lazy, and the Cubans are no exception to the rule.

We left Havana on Dec. 11th for New York dressed in linen suits, and with a thermometer of about 80 degrees; in two days we were glad to put on heavy flannels, thick suits and overcoats, and when we arrived in New York on the 15th we found everything frozen up and the thermometer down to zero. Thus ended a most pleasant six weeks holiday. The last man I shook hands with on the steamer in Havana died at Ciego in the centre of Cuba three weeks after our departure.

## ON THE SIGNIFICANCE OF CERTAIN PHASES IN THE LIFE HISTORY OF THE MALARIAL PARASITES.

BY

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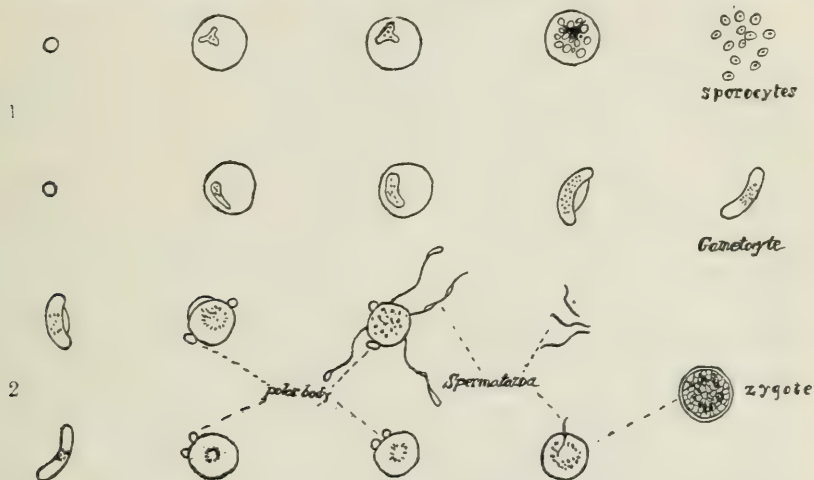
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In a recent number of the "Quarterly Journal of Microscopical Science," Prof. Lankester (1) in commenting on Drs. Ross and Fielding-Ould's (2) excellent paper on "The life-history of the parasites of malaria," has drawn attention to the significance of certain of these phases, which, although mainly of morphological and biological importance, are nevertheless of such general interest as to merit the attention of other than the pure morphologist or biologist.

To recapitulate briefly a familiar subject, the life-history of the malarial parasite is somewhat as follows: The youngest parasites are found as minute amœbulae within the red blood corpuscles of the animals which they have infected. After growing for an interval of one or several days within these corpuscles they reach maturity, and develop into either *sporocytes*, or *gametocytes*. In the case of an amœbula that becomes a sporocyte, the nucleus divides into a number of segments, each of which surrounds itself with a small portion of protoplasm and becomes a *spore*, the process being identical with the ordinary process of asexual reproduction or multiplication of bacteria by fission. The corpuscle finally bursts, allowing the spores to go free, to attach themselves to fresh blood corpuscles, therein to grow and repeat their cycle of development. In the case of a gametocyte, the nucleus does not divide, and the parasite reaches its full maturity without showing any signs of spore-formation. "As their name indicates, the gametocytes are sexual forms, male and female. They possess no function within the vertebrate host, but are meant to continue the life of the organism within a second host—a suctorial insect." These changes will be better understood on reference to figure 1, which is taken from Ross's diagrams (2). Within the blood of man the gametocytes undergo no further development, only undertaking their sexual functions when drawn into the stomach cavity of a gnat. Here they swell up slightly. The male gametocyte gives origin to a number of microgametes or spermatozoa, the female gametocyte develops into one large macrogamete or ovum. The microgametes or spermatozoa possess very active powers of locomotion by virtue of which they wander about till they encounter a macrogamete or ovum, which they imme-



diately enter and fertilise. These changes are depicted in figs. 1 and 2. It seems singular, as Lankester has remarked, that we should find in these most minute Protozoa, a process of fertilization identical almost step for step with the process as we find it in the vertebrate phylum. One can hardly read MacCallum's (3) graphic description of his discovery of this process without feeling how well his words would describe the fertilisation of the egg of an echinoderm, or a fish, as we see it under the microscope. After fertilisation, the fertilised ovum, or as it is now called, the "zygote," affixes itself under the outer muscular coat of the insect's stomach remaining motionless and growing rapidly in size. It develops a distinct capsule, its substance dividing up into from eight to twelve round bodies or "meres." Each mere consists of a central residual mass of protoplasm or "blastophore," whose surface is covered with numerous filamentous



FIGS. 1 and 2. Diagrams illustrating the life-history of the parasite of aestivo-autumnal fever of man: *Hæmomenas præcox*. The upper two rows of figures representing the changes taking place during the growth of this parasite within the blood of man, the formation of sporocytes and gametocytes. The lower two lines of figures represent the further development of the gametocyte within the stomach wall of the mosquito (*Anopheles*), the polar bodies and the spermatozoa or microgametes are shown, finally the fertilized macrogamete or zygote.

bodies or outstanding processes, the "blasts." Fig. 3. When the zygote reaches maturity, the central residual mass or blastophore disappears, and its capsule is left crowded with these blasts, which finally burst their capsule, wander free in the body cavity of the gnat, to collect in the salivary glands of the insect, to pass thence into a fresh host, there to develop again as minute amœbulæ. Now the peculiar part of this is similar to the manner in which the male elements or spermatozoa develop in a very large class of animals, in fact, it is not quite



developed in a very large class of animals, and it is not quite certain but that all animals conform to this type in the development of their spermatozoa. Lankester has, for example, cited the manner of development of the spermatozoon in the earthworm (*Lumbricus*), as described some years ago by Bloomfield (4).<sup>\*</sup> Here one has only to glance hastily at Bloomfield's figures, a few of which are reproduced, figs. 4 A. B. C. D., to see how close is the resemblance in the two cases. (Compare figure 4 D. with figure 3, which represents the corresponding stage in the case of the malaria parasite.) In the case of the earthworm we get the division of the mother sperm cell (fig. A), into a number of cells, which become arranged around a central residual mass or "blastophore" (fig. 4 C and D), as he calls it, from which they become free and swim about as active and independent units, similar to the manner in which the malarial blasts become free from the central residual masses of their meres or blastophores. But of course, in the case of the malarial parasite, we have this distinction, that these blasts, although resembling spermatozoa in the form and manner of their development, do not serve the purpose of fertilising an ovum as the spermatozoa of the earthworm do, but directly continue the life of the species, in a fresh host. Throughout the range of the animal kingdom, and the vegetable kingdom also for that matter, this is the first example which we have of the perpetuation of the race by means of a cell, which in shape and manner of development is a microgamete or male element. We are accustomed to find the product of the fertilised cell resembling in every case the macrogamete or ovum, in this respect the malarial cell and its allies form an evident exception to the rule. For these cells, or blasts, Lankester has proposed the name of "andromorphous" or "spermatomorphous" blasts or cells, in contradistinction to the ordinary "öomorphous" or "gynæcomorphous" blasts or cells of the tissue forming plants and animals. "We are certainly accustomed," states Lankester, "to associate the phenomenon of non-sexual reproduction in the higher animals with the production of öomorphous cells. It is only an egg cell which is capable of multiplication and the production of new individuals of the species, without conjunction with a fertilising cell (parthenogenesis). There are no cases on record, at any rate among animals, of parthenogenesis by means of male cells or male individuals. Speculation and experiment have both been brought to bear on the question as to whether an andromorphous cell (spermatozoon) can be made to develop a new individual if supplied with a cell body without the addition of the nuclear matter of an öomorphous cell.

<sup>\*</sup> See also Calkins' "Spermatogenesis of *Lumbricus*." Jour. Morph., vol., XI., p. 271. 1895.

It seems to me we have in the case of the spermatomorphous or andromorphous blasts or "young" of the malaria parasite a distinct proof that the spermatozoon is, so far as its essential nature is concerned, capable of acting the part of the solely sufficient germ in a parthenogenetic reproduction or multiplication, and that it is, therefore, not of the essence of "solely sufficient germs" that they should be egg cells or öomorphous. At any rate, we have, I think, in the blasts or filiform young of the malaria parasite, an altogether exceptional case of elements of the male form carrying on without acting as fertilisers, but as "solely sufficient" for the life of the species. We have here, indeed, a parthenogenesis by means of male elements. The parthenogenesis hitherto known in animals is "gynæcocratic," that exhibited by the blasts of the *Hæmamebidæ* is "andocratic."

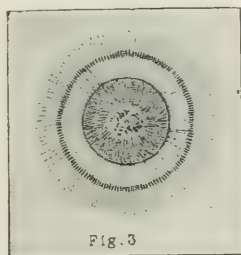


FIG. 3

FIG. 3. Isolated blastophore of the malaria parasite, bearing a number of blasts affixed to it, each by one extremity. (Ross and Fielding-Ould.)

While the multiplication of the flagellate zoospores of some plants may perhaps be placed in this same category of reproduction, yet it is the peculiar mode and manner of the development of these blasts in the malaria parasite, as Lankester remarks, which so truly stamps them as male cells, and renders comparison with this process as it occurs in the *Protophyta* quite a different matter. Numerous attempts have been made from time to time, to compare the process of conjugation as we get it in such organisms as *Paramœcium*, and *Stylonychia*, with the process of the union of the germ-cells in the multicellular animals. Bütschli long ago pointed out how cell divisions tend to run in cycles, each of which begins and ends with a process of conjugation or fertilisation. While the cells produced in the multicellular forms, as the result of one act of fertilization or conjunction cohere to form the multicellular body, in the unicellular forms, the cells produced as the result of one cycle following conjunction, are collectively comparable to the multicellular body. While on morphological grounds this comparison is quite correct, and is the base of Haeckel's and Virchow's conception of the "cell-state," it affords little or no light on the subject of fertilisation or conjunction. Although we know in the case of the infusoria, con-

junction is certainly a necessity, we are just as certain in other unicellular and even multicellular forms it is unnecessary. Within the phylum of the Protozoa, we find every gradation in the evolution of the process of bi-sexuality, from the most primitive form of conjunction, to a process of conjunction so similar to the fertilisation of the vertebrate egg, as in this case of the malaria parasite as to be almost identical. Does not this afford us additional evidence, to what we have recently learnt regarding the phenomenon of cell division as presented by the protozoa,\* that in the class of the protozoa we have arranged side by side animals, which, although resembling one another in their

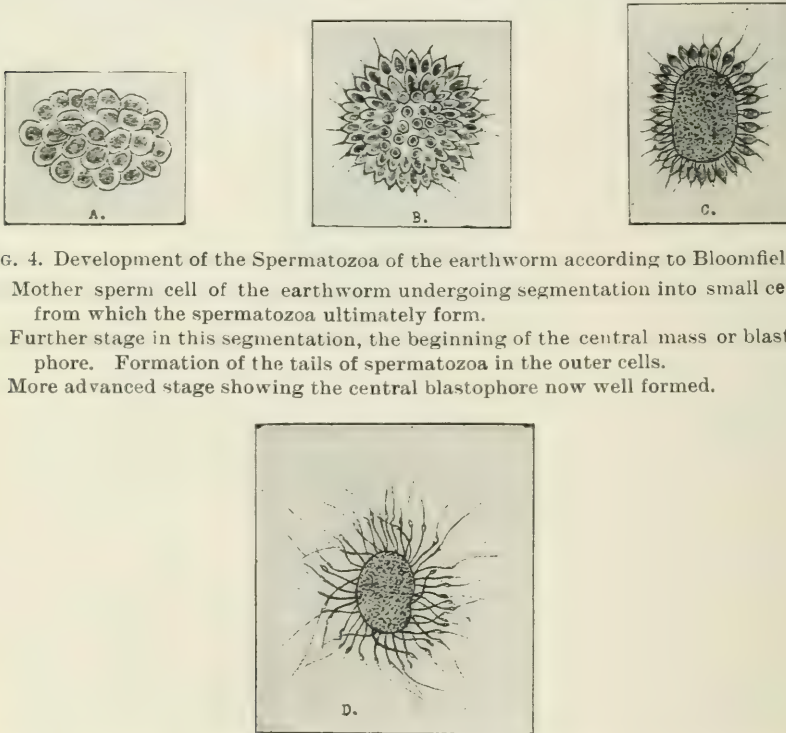


FIG. 4. Development of the Spermatozoa of the earthworm according to Bloomfield.

- A. Mother sperm cell of the earthworm undergoing segmentation into small cells from which the spermatozoa ultimately form.
- B. Further stage in this segmentation, the beginning of the central mass or blastophore. Formation of the tails of spermatozoa in the outer cells.
- C. More advanced stage showing the central blastophore now well formed.

D. Still later stage spermatozoa nearly mature, but still adherent to the blastophoral body.

apparent simplicity of form and structure, are otherwise but distantly related? Sir Michael Foster has somewhere remarked, in speaking of the results of physiological experimentation on the infusoria, that the apparent simplicity of these Protozoa is in many cases a veil, which covers and hides a vast antiquity, and is after all perhaps the most serious obstacle with which we have to deal in drawing conclusions

\* See Calkins Jour. Morph. Vol. XV., p. 711. 1899.



regarding them. As regards the reproductive elements of the malaria parasite, however, there is nothing about them which is for a moment a matter of conjecture, every stage has been repeatedly confirmed over and over again by the most competent observers. As a matter of fact, these elements were first described in the Coccidiidæ (closely related forms to the malaria parasites or Hæmamœbidæ), in the summer of 1897 by Simond (5). He showed that in the case of *Coccidium oviforme*, a familiar and well known parasite of the epithelial cells of the rabbit's intestine and liver, while the majority of the parasites become sporocytes, infecting fresh cells, under certain circumstances a few grow large and become macrogametes or ova, while others give rise to an outgrowth of spermatozoa or microgametes, resting on a central residual mass or "blastophore," as we get in the case of the earthworm, Fig. 4. In fact, Simond, judging from the conditions which he found in the Coccidiidæ, was the first to suggest that in the malarial organism, we might expect to find a similar process. We now know of many species of Coccidiidæ which produce microgametes and macrogametes, similar to the above. Podwyszozki (13), Clark (14), Simond (5), having described them in *C. oviforme*, Schuberg (6), in the coccidium of the mouse, Labbé (8), Simond (5), and Siedlecki (11), in a coccidium of the triton, Simond (5), in *C. salamdrae*, Léger (7) and Hagenmüller (12), in the genera *Diplospora* and *Barroussia*, while Léger (7), and Wasielewski (9), have found recently a peculiar form of microgamete in a coccidium of *Myriapodes*, which has the form of an elongated club, bearing two cilia in its anterior surface. The real significance of the microgamete was first surmised in 1895 by Schuberg (6), whom Siedlecki (11) quotes, regarding the microgametes of the coccidium of the mouse as follows, ". . . namentlich könnte man daran denken dass die Formen eventuell eine Copulation vermitteln möchten." In this, however, he was probably forestalled by Labbé as far back as 1891.

In the case of the malarial parasite, a point of some considerable interest arises in connection with two small bodies found in relation with the maturation of the male and female gametocytes. (Fig. 1 and 2 polar bodies.) They resemble in shape and mode of origin the polar bodies arising in connection with the maturation of the ova of multicellular animals. Ross has suggested that in the malarial parasite they are of this nature. The suggestion is a very tempting one; we must have, however, a more detailed account of their origin, the nuclear changes that take place with regard to them, before we can finally accept this conclusion, their presence so far being seemingly somewhat inconstant. It will be observed that in the case of the



malaria parasite they arise in connection with both the female and the male gametocyte, the polar bodies proper of the higher animals arising only in connection with the female element. Our ideas to-day regarding the development of the polar bodies and the maturation of the germ-cells date from Van Beneden's epoch-making discovery, that the germ-cell contains only one-half the number of chromosomes of the ordinary tissue body cells. Thus, on conjunction of the germ-nuclei in the egg, the number of chromosomes are kept constant instead of being doubled on each act of fertilization, as they would be if the germ-cells contained the same number as the body cells contain. In man, for instance, the number of chromosomes in the body cells is said to be sixteen, their number in each germ-cell is eight, the union of the two germ nuclei in fertilisation gives the egg the full sixteen chromosomes of the body cell, eight of which are derived from the male, eight of which are



FIG. 5. The formation of spermatozoa in the coccidium of the occipus, the spermatozoa are seen adherent to the residual mass or blastophore, similar in manner to the way they adhere to the blastophore in the case of the earthworm. (Siedlecki.)

derived from the female side. Beyond this primary halving or reduction of the chromosomes in the germ nuclei, we know little or nothing of the real significance of the phenomena connected with their maturation. When we attempt to advance beyond this we meet with the most contradictory observations, and diverse opinions, this being one of the most difficult and obscure fields of biological research. All agree that the final reduction of the chromosomes in the germ-cells is effected in both sexes, by the last two divisions by which the definitive germ-cells arise from the primordial mother germ cell. In each case, four cells arise from these two divisions. In the case of the female, only one of these four cells reaches maturity as the ovum, the other three aborting; *they are the polar bodies*. Thus in the higher animals it will be seen that the polar bodies are peculiar to the maturation of the female germ-cell. No similar bodies have been found in connection with, so far, the

maturation of the male and female elements of the Coccidiidæ. Siedlecki (11) has endeavoured to trace the changes taking place in the germ nuclei during fertilization in a coccidium of the octopus, to see whether a true process of reduction occurs here. While he has been unable to establish this very definitely the problem, as he remarks, being "difficile à trancher," he has rendered it more than probable that a true process of reduction really takes place here. In the macrogamete or ovum, he suggests that this reduction is effected by means of numerous small bodies of darkly staining substance, which are extruded from the nucleus during fertilisation, and are seen for some time outside the nucleus in the cytoplasm, finally disappearing, being probably broken up by the cell and excreted. In the formation of the microgametes or spermatozoa, no polar bodies are found similar to the ones in the malarial organism, the reduction being here "probablement lieu par le fait de leur formation en nombre considérable aux dépense d'une cellule," a reason more than once put



FIG. 6. Formation of spermatozoa in the coccidium of the octopus, later stage than Fig. 5, spermatozoa nearly mature. (Siedlecki.)

forward to explain reduction in the male elements of higher animals. In the infusoria we undoubtedly get a process of reduction, the nucleus dividing up into several pieces, one of which only takes part in conjunction, the other degenerating and perishing like the polar bodies. In *Paramœcium caudatum* Hertwig (15) tried to count the chromosomes. While he was unable to do so with absolute certainty, he found that before reduction there were approximately eight to nine, after reduction four to six, practically a halving of the chromosomes. In the Gregarinidæ, a closely related class to the Hamamœbidæ, Wolters (16), while he was unable to count the number of chromosomes, has observed the formation of an actual polar body, cast off from each of the animals at the time of their conjunction. Here the process would seem to be identical with the condition in the malaria parasite. In some of the

unicellular plants a complicated process has been described by Chmielewski, where the nucleus, after conjugation, divides into two parts one of which breaks up and degenerates, being apparently digested by the cytoplasm, the other persists as the permanent nucleus. In this case the process seems to resemble the condition found in the Coccidiidæ, if Siedlecki is correct in considering the dark bodies extruded from the nucleus during conjunction as true nuclear material. Perhaps no want is more necessary to-day in biology, than a wider and more comprehensive knowledge of the whole problem of reproduction, in all its various forms.

The discovery in the malarial parasite of some such relation between the asexual and the sexual modes of reproduction as Maupas has established for the Infusoria, might prove in the future of some practical value. He has established the fact that in the infusoria, in order for conjunction to take place, the conjugating animals have to be from different cultures, the sexes of the same culture not pairing together. He has also shown that the sexual mode of reproduction can be entirely suppressed, if the animals be grown on exceptionally rich culture media, going on reproducing themselves by fission until the culture finally dies out from senile degeneration. It is not only the lower animals and plants that exhibit merely a relative need of sexual reproduction, but many of the higher ones also. In bees, for instance, the egg invariably develops into an adult whether it is fertilised or not, the fertilised eggs producing female bees, the unfertilized drones. Perhaps one of the most singular examples of the relation of the sexual to the asexual mode of reproduction is exhibited by the alga *Ectocarpus* as described by Berthold (17). Here the macrogamete or female cell, on reaching maturity, comes to rest for a few minutes. If it does not happen to be fertilised by a male cell during these few minutes of rest, it draws in its flagella completely, becomes spherical, and prepares itself for parthenogenetic germination. The male elements have also the power of spontaneous development, but this development never gets beyond the embryonic stage.

While this need for fertilization may only seem relative, it probably occurs, however at some time in the life-history of every Protozoon though the exact period and the conditions under which it may occur seem to vary greatly even in closely related species. Hertwig in a recent paper (18) claims that in the Protozoa a true process of fertilization as we understand it in multicellular animals is not present; that what we have is a process of division in manifold shapes, accompanied by a need for the reorganisation of the unicellular body, accomplished from time to time by conjugation.

In the Coccidiidae and Haemosporidae we get reproduction by fission producing cells, a certain few of which develop into sexual elements; these reproduce the species through the interposition of some intermediate host. The essential requirements of this process being, first, the production of the sexual elements, and secondly, development in the tissues of some intermediate host. Now, if we can by any means at our disposal interfere with either of these requirements, it is obvious we can hope to control the spread and growth of these organisms. In the malaria parasite, then, we have the choice of endeavouring to so influence the growth of the amœbuke within the blood as to cause them to lose their power of producing sexual elements, or what is much more feasible, by destroying or removing the intermediate host we can prevent the further development of the sex elements once they have formed. This, of course, can be accomplished by the destruction of the mosquito or gnat, an operation now being extensively carried out in many countries.

Woods Holl, August, 1901.

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## ON THE FREQUENCY AND DISTRIBUTION OF GOITRE IN THE ISLAND OF MONTREAL.

BY

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All are familiar with the existence of goitrous regions in the Old World, with the prevalence of goitre in Switzerland for example, in certain parts of France, in Norway and also in certain districts of Germany, and with its so very frequent occurrence in the Peat District in England, that there, in the Old Country, it is still spoken of as "the Derbyshire neck." Certain writers have described fully these endemic occurrences in Europe, bringing forward various theories in explanation. In Switzerland, Bircher<sup>1</sup> has advanced the geological theory, *viz.*, that goitre is limited to districts overlying Silurian and Devonian formations, and to the Carboniferous and Permian deposits. Johannessen<sup>2</sup> has reached practically the same conclusions in regard to Norway. Berry<sup>3</sup> in England, finds goitre only where there are chalk and sandstones of Triassic development, while it is absent where there are eruptive rocks. Kocher has brought forward evidence to show that the water habitually drunk has to do with the development of goitre and that, therefore, Bircher's results are not wholly correct. As to what in the water leads to the disease, observations have so far given negative results. Lustig and Carle<sup>4</sup> carried out certain experiments with animals, the results of which suggest that the water in so-called goitrous districts contains infective agents which are capable of inducing the disease in persons and animals hitherto free from the disease. Hirsch, A. von Humboldt, and Virchow held long years ago that something of a miasmatic nature must lead to the development of the condition. Still, an analysis of the numerous records of bacteriological examinations of goitre waters reveals nothing but what is most unsatisfactory. Lustig and Carle indicate a bacillus which liquefies gelatine as being constantly present in the goitrous waters examined by them; Kocher points out that goitre waters are distinguishable from non-goitrous in Switzerland by the relative abundance of bacteria which they contain. Klebs found certain infusoria, Bircher a diatom together

with polymorphous bacteria, while Waters has recently suggested that certain amœbæ are present therein, upholding a theory somewhat similar to the present popular sporozoon theory of cancer and malignant growths. This bacterial or miasmatic theory remains to-day as it was many years ago—still a theory without any sufficiency of positive facts to establish it.

The prevalence of goitre in the New World has not received so much attention. Nevertheless here we have well marked goitrous regions. In Canada more especially, as has been pointed out by Springle<sup>5</sup>, goitre is common along the St. Lawrence from Quebec City upwards to the Ontario peninsula. It is however remarkable how scanty is the literature upon Canadian goitre—how those living in the midst of it pass it by. Since the operative treatment of the condition has become more popular somewhat more has been written, here in Montreal more particularly by Shepherd<sup>6</sup>, while McPhedran of Toronto has called attention to the extent of the allied condition of cretinism in Ontario. To our knowledge, however, no writer of late has attempted to estimate the frequency of the occurrence or the boundaries of the regions in which goitre occurs in the Dominion of Canada. As a preliminary step towards gaining such knowledge Dr. Adami recently sent out circulars throughout the Dominion to altogether close upon a thousand medical men, and he asked me to study the replies. While undoubtedly very interesting and affording valuable material, these replies did not give us all the information necessary to enumerate clearly the extent of the disease. There were too many gaps, nor were the boundaries of the different districts reported upon defined with sufficient clearness. In the meantime as a preliminary study it seemed that more valuable information would be obtained by working upon a less extensive scale, by taking a well-defined district and striving by a thorough canvass of the medical men practising therein, to obtain definite data. To this end I have confined the search for the present more particularly to the Island of Montreal.

This island, thirty miles long by ten miles wide, is situated in the mouth of the Ottawa river at its junction with the river St. Lawrence. In general configuration the island is a plain gently sloping in all directions from Mount Royal, an eruptive mass of rock, much the worse for wear, which rises abruptly near the centre of the island to a height of eight hundred feet above sea level. The remainder of the island is but sixty feet above sea level. The soil varies from a sandy loam at the extremities of the island to fairly stiff clay plentifully strewn with granite boulders in the central portion. In several localities a heavy blue clay forms the lower strata of the soil. The depth of soil ranges

from a few inches to several feet, but nowhere is it of every great depth. The rocks underlying the soil are chiefly Silurian Limestone, with here and there an outcrop of Lower Laurentian, the strata of both formations being much distorted and intermingled by volcanic action. There are but few natural springs in the island and consequently there are few marshes though here and there, owing to the shallowness of the soil, the surface water remains for a long time during the early spring or after heavy rains.

Regarding the water supply of the inhabitants, the citizens of the city of Montreal and those people living near the shore use river water, chiefly Ottawa river water, which is "soft" and contains a low percentage of salts of lime. Those people living inland depend upon wells for their water supply. These are more or less shallow and invariably contain surface water in varying degrees. For the most part they are fairly good potable waters. Unfortunately a complete and careful analysis of the inorganic constituents of these waters has so far not been published; neither has a bacteriological analysis of these same waters been undertaken. Our knowledge therefore on these important points is very meagre, and not until it is complete will it be possible to state what, if any, are the constituents by reason of which the water supply exerts the influence which it appears to have upon the frequency of goitre in a given locality.

In the city of Montreal it is singularly rare that a person born and brought up there is afflicted with goitre, while it is quite common in the rural parishes round about. Believing that more definite information might be had on the frequency of goitre among the rural inhabitants, a careful survey has been made of the entire island. This was accomplished by personally interviewing the several physicians who are practicing in the villages and country beyond the limits of the city of Montreal. These interviews brought to light some very interesting facts. It was ascertained that goitre is more or less common throughout the island, being most frequent in females, especially young girls at the age of puberty. It is, however, not uncommon in males. The condition also varies in severity from a simple enlargement of a portion of the thyroid gland to the extreme forms of goitre. These latter cases are far from common. Moreover, it was discovered that there was a variation in the relative frequency of the condition in the several parishes into which the island is divided. This variation in distribution will be better understood after referring to the accompanying map.

It will be observed that the disease is less frequent in the eastern

portions of the island than it is in the western, while it is absent or nearly so from the central parishes of Sault-au-Recollect and St. Laurent. In other words and to be more definite, proceeding eastward from the city of Montreal I found that at Longue Pointe and Pointe aux Trembles 1.5 per cent., or 15 per 1,000 of the population, are afflicted with goitre. At the opposite side of the island in the parish of Riviere des Prairies, the condition is present in 2 per cent. of the inhabitants; while in the parish of St. Leonard lying wholly inland between the parishes of Pointe aux Trembles and Riviere des Prairies, 4 per cent., or 40 per 1,000, of the people are goitrous. Dr. Deschatlelets informed me that years ago, when the inhabitants of Pointe aux Trembles depended almost entirely upon wells for their water supply, goitre was quite as prevalent there as in the internal parish of St. Leonard. Afterwards a system of water pipes was introduced in the village of Pointe-aux-Trembles and the water supply was derived from the river St. Lawrence, then goitre rapidly decreased in frequency until it fell to the present ratio of 1.5 per cent. No falling off in frequency has been noted in the same interval in the parish of St. Leonard. In all other respects save the water supply the conditions surrounding the people of both parishes are, and have been, the same.

Passing now to the back of the island, to the parishes of Sault-aux-Recollect and St. Laurent, in the former goitre is almost unknown, while in the latter the ratio is less than one per cent. of the population. This negative district extends for several miles to the westward along the Riviere des Prairies as far as the parish of St. Genevieve. Here again goitre is prevalent in the eastern portion to the extent of 1.5 per cent. of the population becoming rapidly more frequent towards the western confines of the parish. On the south shore of the island in the parish of Cote St. Paul, immediately to the west of the City of Montreal, we find that 3 per cent. of the population are goitrous. Passing up the river, the neighbouring parish of Lachine shows an average ratio of 3.5 per cent.; further up in the parish of Valois this ratio has increased to 4.5 per cent.; and the condition becomes steadily more frequent until, in the parish of St. Annes de Bellevue at the western extremity of the island, it has risen to 7 per cent. of the entire population. Thus, in passing from the east to the west along the south shore of the island, exclusive of the city of Montreal, a gradual increase in ratio has been encountered from 1.5 per cent. to 7 per cent. of the population.

The question naturally arises. What is the explanation of this variation in frequency? Does it bear any relationship to (1) general



configuration of the soil, (2) climatic differences, (3) occupation of inhabitants, (4) mode of life and food supply, (5) depth of wells and habitual water supply? And if so what is the nature of this relationship?

As has been previously noted, the general configuration of the island is the same throughout with the exception of Mount Royal; there are no climatic differences; the inhabitants of the various parishes are engaged in the same pursuits; the mode of life is the same throughout. All are well-fed and dwell in comfortable houses, and nowhere are the people poverty stricken. Nationality is not a factor either, for although many cases occur amongst the French, the condition is proportionately common among the English, Irish, and Scotch settlers. With regard, however, to the relationship of the habitual water supply, an answer cannot be so readily given.

As you are well aware, goitre has from ancient times been considered as a water-borne disease and the prevalent opinion has also been that goitrous water was always richly impregnated with the salts of lime, magnesia, etc. Considerable evidence has accumulated in support of this view. Both men and animals suffering from goitre have been cured by removal from goitrous to non-goitrous regions, while healthy animals have been rendered goitrous by compelling them to drink water from so-called goitrous wells. Ewald<sup>4</sup> states that in Switzerland by changing the water supply of one of the villages of the Aarer, taking the water from a non-goitrous spring on the other side of the river Aar, the percentage of cases of goitre among the school children was reduced during ten years from 58 to 11 per cent. Similarly in the Island of Montreal we have observed that in the parish of Pointe-aux-Trembles the introduction of a waterworks system supplied with water from the St. Lawrence river resulted in a reduction in the cases of goitre from about 4 per cent. to about 1.5 per cent. Other interesting phenomena observed in the Island of Montreal were in connection with the depth of the wells. Where the wells are deep and the soil chiefly clay, goitre is less prevalent than where the wells are shallow and the soil more sandy. These shallow wells invariably contain surface water only, while the deeper ones, although probably containing more or less surface water, are supplied chiefly from deep water-bearing strata of sand or gravel. The water from now a few of these deeper wells is quite "soft"; some of them supply a water which is highly sulphurous, and from a few a water is obtained having strong saline properties which render it a good substitute for Vichy water. In the western portion of the island the depth of the wells does not seem to have such

a direct bearing upon the frequency of goitre. These facts will be better understood by referring to the following table.

| Name of Parish.          | Ratio to<br>1000 of<br>population | Average<br>depth of<br>wells. | General<br>configura-<br>tion. | Nature of Soil.           |
|--------------------------|-----------------------------------|-------------------------------|--------------------------------|---------------------------|
| Point aux Trembles....   | 15                                | 20 to 50 ft.                  | Flat.                          | Clay loam.                |
| Longue Pointe.....       | 15                                | 20 to 50 ft.                  | Flat.                          | Clay.                     |
| St. Leonard.....         | 40                                | 6 to 10 ft.                   | Level.                         | Sandy.                    |
| Riviere des Prairies.... | 20                                | 15 to 20 ft.                  | Level.                         | Clay loam.                |
| Sault aux Recollets....  | Very rare.                        | 20 to 50 ft.                  | Flat.                          | Glacial clay.             |
| St. Laurent.....         | Very rare.                        | 6 to 10 ft.                   | Flat.                          | Clay. [loam.              |
| Cote St. Paul.....       | 30                                | 4 to 20 ft.                   | Flat.                          | Black mush and sandy      |
| Lachine.....             | 35                                | 8 to 10 ft.                   | Flat.                          | Sandy loam, glacial clay. |
| Valois.....              | 45                                | 8 to 12 ft.                   | Flat.                          | Sandy loam.               |
| St. Annes.....           | 70                                | 6 to 15 ft.                   | Mostly flat.                   | Sand.                     |
| St. Genevieve.....       | 15                                | 10 to 20 ft.                  | Flat.                          | Clay loam.                |

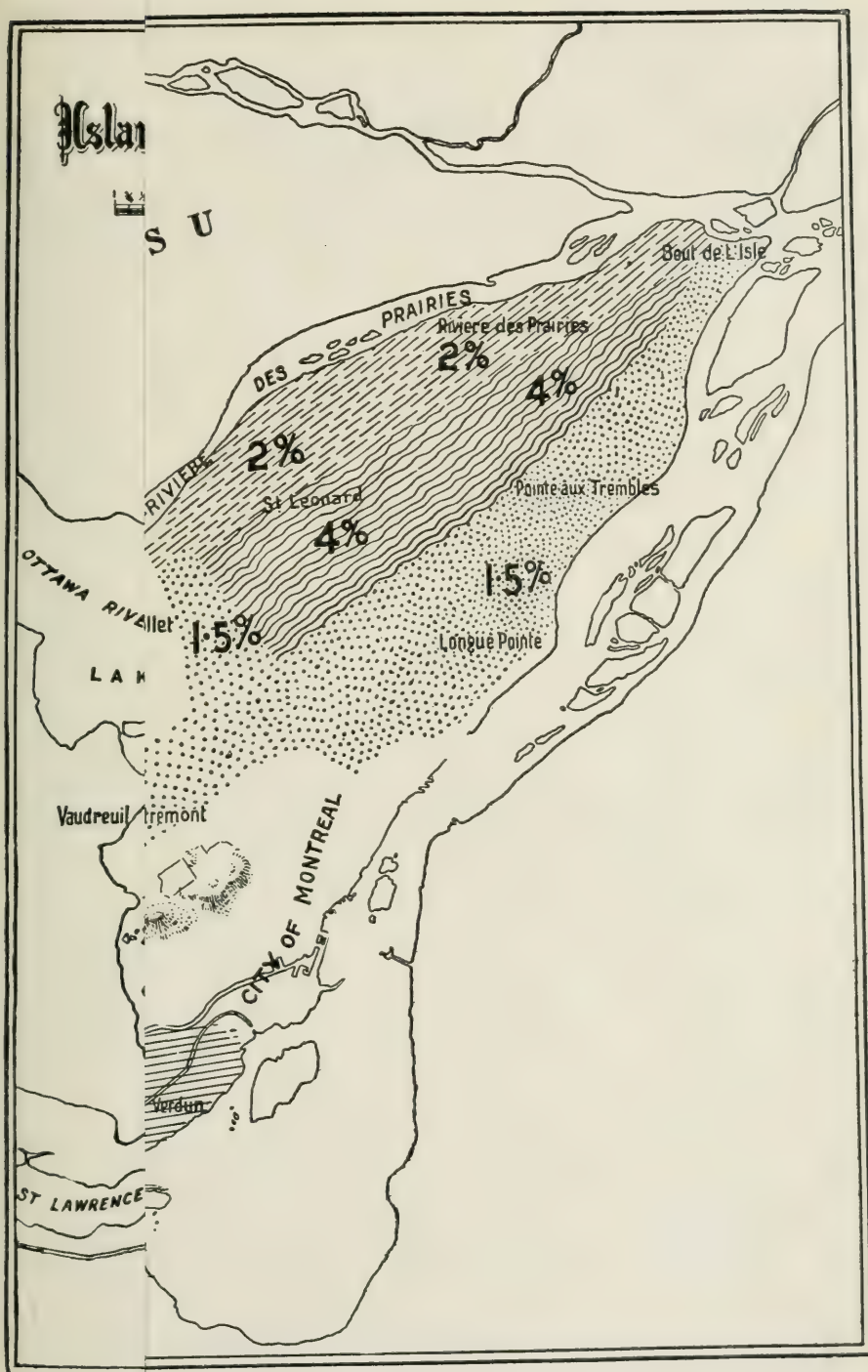
It is quite evident then that here in the Island of Montreal, where goitre is fairly common, the occurrence of the disease apparently does not depend upon the nationality of the inhabitants nor upon their surroundings or social conditions, but rather seems to be affected by the water used for drinking and culinary purposes. It would seem, also, that the nature of the soil and depth of the wells are factors which must be taken into consideration, and probably play quite as active a part in bringing about the condition of goitre as the geological formation of the underlying rock is said to do. Throughout the Island of Montreal the wells are for the most part what may be termed shallow, and nowhere is it necessary to drill into the underlying rock to obtain water. Hence the water in these wells is properly termed surface water, being the rainfall of the locality after filtration through soil of varying character, depth and porosity. In the parish of Sault-aux-Recollet, where the wells are fairly deep and the soil consists for the most part of clay, apparently deposited during the glacial period and plentifully intermingled with granite boulders, goitre is very rare, corresponding in this respect to the City of Montreal and the immediate shores of the island, whose inhabitants derive their water supply from the Ottawa river. In the neighbouring parish of St. Laurent we find the same sort of clay soil, but here the wells are quite shallow, being only 6 to 10 feet deep, as compared with those in Sault-aux-Recollet which are 20 to 50 feet deep. Goitre is rare here also, in marked contrast with the state of affairs existing in the parish of St. Leonard, where the wells are of about the same depth but where the soil is sandy. In this latter parish the ratio of goitre is 4 per cent. or 40 per thousand. Again when we compare the conditions existing in the parish of St. Annes with those in the parish of St. Laurent the contrast is even more pronounced. In these two parishes there is little

difference in the depth of the wells but the character of the soil differs much. In the former it is glacial clay, in the latter it is of quite a sandy nature. The frequency of goitre in these two parishes also differs widely, for the former it is rare while in the latter 7 per cent. of the people are afflicted with goitre. It is apparent, then, that while the underlying Silurian Limestone formation by affecting the water supply of a locality may have an influence in the frequency of goitre in that district, it is also clear that the depth of the wells and the character of the soil, as to porosity and mineral constituents, have as great, if not a greater, effect. All of these factors must be considered as acting together, and before we will be able to arrive at anything definite regarding the causative agent of goitre, much work must be done. It is absolutely necessary that the water from a considerable number of these wells be subjected to a careful chemical and bacteriological analysis, by way of comparison to ascertain:—(1) Whether the mineral constituents in the water from wells in clay soil differ materially in kind and quantity from those in the water from wells in sandy soil. (2) Whether bacteria are relatively more abundant in the one than in the other. Then having these comparisons at hand, we will be in a better position to state what is the nature of the causative agent of goitre. Is it, as Bircher thought, a mineral constituent derived from certain underlying rocks, or is it, as according to Kocker, of a bacterial or miasmatic nature? If the former view is correct does this substance act directly through the blood upon the thyroid gland, or if the latter, is the disturbance of the nature of a subinfection brought about by the great number of bacteria ingested into the stomach? These are but a few of the main points which remain to be settled before we arrive at a full understanding of the causation of this obscure pathological condition.

It is my intention in the near future to extend this research to other goitrous regions, more especially to Isle Perrot, and also to certain parishes on the mainland in the neighbourhood of Vaudreuil, where goitre is said to be very common, alike in men, women and domestic animals. With regard to the remainder of the Province of Quebec and the Dominion of Canada as a whole, it is well-worth while for the provincial medical societies to take the matter in hand and ascertain the relative frequency of goitre in the several provinces, and define clearly the boundaries of all goitrous regions met with in Canada.

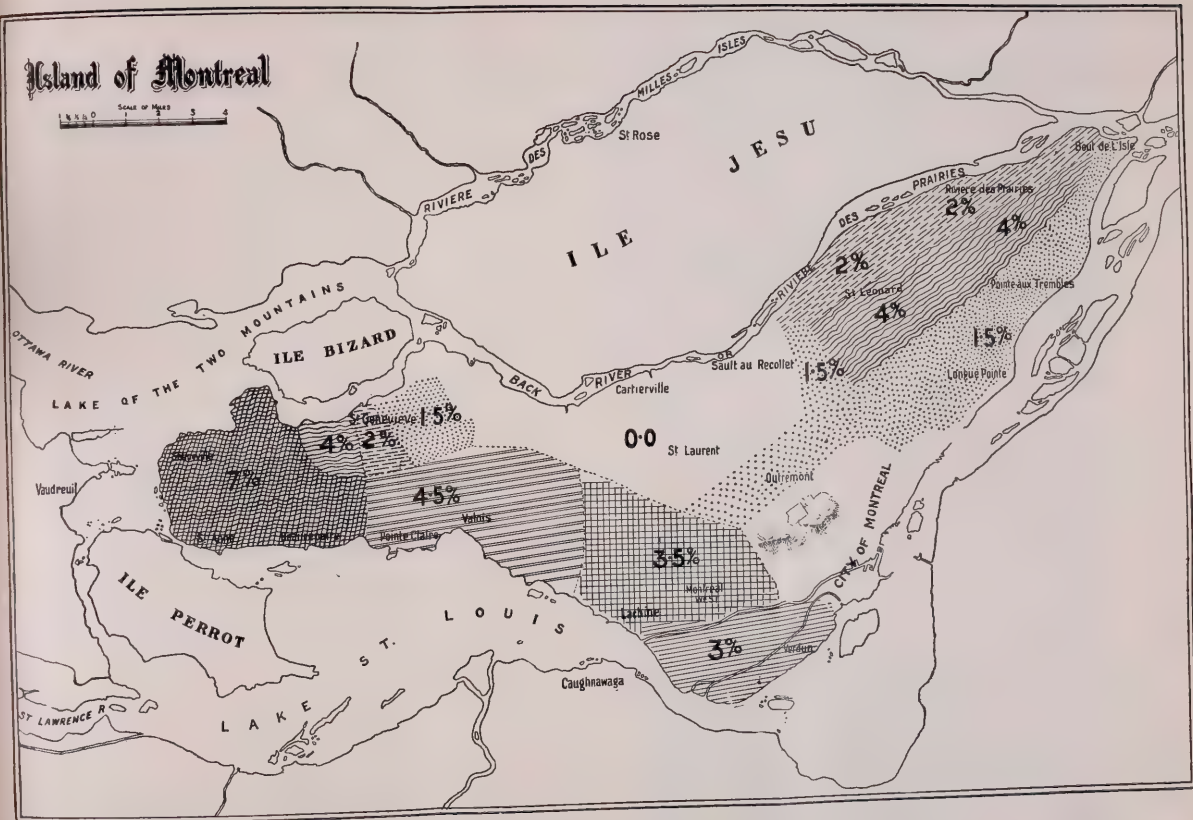
#### Conclusions:—

(1) Judging from the above observations made on the Island of Montreal, there is a relationship between the habitual water supply of the inhabitants and the prevalence of goitre on the island.





## Island of Montreal



(2) Those living in the city of Montreal and along the shores of the island and who drink Ottawa river water are unaffected.

(3) Those living in the country and who are dependent upon wells, relatively shallow, for their water supply, are liable to be affected.

(4) In districts such as Point-aux-Trembles, where formerly the greater number of the inhabitants drank well water and goitre was common, there has been a considerable reduction in the number of cases of goitre since river water has been supplied to the inhabitants.

(5) The drinking of water from shallow wells is not the only factor in causing the disease, as is instanced in the parish of St. Laurent.

(6) A certain relationship would, however, appear to exist between the nature of soil, the shallowness of the wells, and the prevalence of goitre. When the overlying soil is glacial clay although the wells are shallow, goitre does not occur, where, on the other hand, the soil is sandy and porous, as in the parishes of St. Annes and St. Leonard, goitre is very common, although there is considerable variation in the depth of the wells.

(7) So far as the present observation goes the nature of the underlying rock, which from one end of the island to the other is Silurian Limestone, is not the essential factor in the causation of goitre, although we may conclude from the observations made in Switzerland, Norway, and in the Valley of the St. Lawrence, that it is a strong predisposing factor.

To Dr. Adami I desire to extend my thanks for his kindness in supervising and directing this research, also to the several physicians residing in the villages and country parishes, who have so carefully lent their aid and observations.

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1. Bircher, "Die endemische Kropf.," Basle, 1883.
2. Johannessen, *Zeitschr f. Klin. Med.*, XIX., pp. 194.
3. Berry, J., *Brit. Med. Jour.*, 1891, Vol. I., p. 1269.
4. Ewald's article in Nothnagels "Specielle Pathologie," XXII., Vienna, 1896.
5. Springle, *Montreal Medical Journal*, Vol. XXVIII., No. 12, 1899, pp. 909-914.
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## SPORADIC CRETINISM IN CANADA.

BY

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In 1900, Professor J. G. Adami instituted a searching enquiry with regard to the existence and distribution of goitre in Canada, in the course of which he obtained some information as to cases of sporadic cretinism, which he has kindly allowed me to use. In response to my enquiries I have brief notes of 13 cases and knowledge of the existence of 27 other cases, in which, for various reasons, I have not been able to obtain notes of any clinical value. The cases are mostly in Quebec, New Brunswick, Nova Scotia, and Newfoundland, have not been included in either of the case lists I shall presently mention, and are exclusive of cases in institutions and asylums. Of the latter, to my personal knowledge, there are possibly 20 more.

The prevalence of sporadic cretinism may be fairly judged from the papers of Dr. William Osler<sup>1</sup> (1897) and Dr. Alexander McPhedran<sup>2</sup> (1898), the latter of whom deals with Ontario only. Dr. Osler's case list contains 60 cases, Dr. McPhedran's 17. I put forward the 40 cases dealt with here merely as a numerical addition to these publications.

The thirty or more practitioners whose cases I cite are selected from about three hundred or less to whose answers (to Professor Adami) I have had access. There is, of course a margin to be allowed for inaccuracy of diagnosis, but the only cases that ought to be ruled out, are those of chondrodystrophia; since sporadic cretinism is a disease of so inaccurate pathology and of such variable conditions of thyroid gland it practically matters but little if we confound with it case of infantile myxœdema, especially since the recognition of either disease is the signal for the exhibition of the same therapeutic measures. If we allow, then, a fair percentage of error, we yet find that 10 per cent. of a number of rural practitioners from all parts of Canada have, or have recently had, under observation, cases of this disease. There is every reason to expect that a more thorough investigation would reveal a correspondingly large number of cases—a frequency of occurrence which is not generally supposed.

Case I. Female, aged 30. (Dr. Giroux, Isle Vert Que.) Height 4 feet 6 inches. No relatives either cretinous or goitrous; no mental

unsoundness in family. Patient has no affection of the sight but is deaf mute, entirely idiotic and has been partially paralysed for some years past. The thyroid is hypertrophied. There has been no treatment and no improvement, and the case has become worse and worse. (Died shortly ago.)

Case II. B—, male, aged 19 months. (Dr. Angus McKinnon, Guelph, Ont.) Height 30 inches, not so large as the other children of the family when they were his age. Mother and her four sisters are goitrous; father's sister became insane. At age of 8 months he was seen to be a dull, listless child, never appearing to notice anything, never laughing or even attempting to move. The thyroid was apparently absent. Under treatment he has improved both mentally and physically, he sees and notices, but never attempts to speak, laughs and crows when played with, and looks mentally much brighter.

Case III. Male, aged  $3\frac{1}{2}$  years, (Dr. McKinnon). Patient was about half the size he ought to have been, and at time treatment was begun he never used his legs, or attempted to speak. At age of three he became moderately active on his legs, looks brighter mentally, and has begun to try to say one or two words. Died in November, 1900, from a growth in the bladder, no autopsy being permitted.

Case IV. V. M. L., aged 6. (Dr. Addison, St. George, Ont.) Height 2 feet  $6\frac{3}{4}$  inches, weight  $31\frac{1}{2}$  pounds. Child is short, fat, pale, hair red and coarse, scalp dandruffy, nose flat and upturned, mouth open, the furry tongue projecting beyond a bad set of teeth; a guttural, snoring sound in breathing; abdomen large and prominent, legs and arms stumpy and myxœdematous. There are no goitrous relatives, the mother is distinctly neurotic and of a neurotic family. Thyroid cannot be palpated. Under treatment in less than six months the child grew  $4\frac{1}{4}$  inches, the legs, arms and abdomen were all much smaller. During treatment the child has been very irritable sweated a great deal, did not sleep as well as before. Hands and feet are now warm, a contrast to their previous state; walking is much improved and mentality greatly improved.

Case V. Female, aged 28 years. (Dr. Robillard, Thurso, Que.) No cretinous or goitrous relatives. Father became blind at 48. Thyroid gland is absent or so small as to be impalpable. I cannot do better than quote Dr. Robillard's most graphic description of the case, which forms an excellent example of the horror of the unalleviated disease. "She does not stand up, but lies on her back, doubled up, knees to chin, in a box two by four and a-half feet, eyes bright, open and piercing, large mouth, enormous teeth, the voice producing a murmur resembling the plaint of a seal. Her sensibility is so obtuse that we cannot



detect if she sees or not. She is mute and apparently deaf. She shows no signs of intelligence whatever; she swallows the food put in her mouth, and the evacuations of her body are made without care. She began to menstruate at eighteen, and has had periods fairly regularly ever since." There has been no treatment and no amelioration.

Case VI. Female, aged 6. (Dr. Casswell, Gagetown, N.B.) No other cases of cretinism, one cousin is goitrous, another epileptic. The sight is unaffected, no deaf mutism, although speech is incoherent. Mental development low; thyroid normal in size. Treatment has been continued now for one year, but there is little change. Myxœdema of moderate degree is present.

Case VII. Female, aged 18. (Dr. J. F. Macdonald, Hopewell, N.S.) The case is not one of undoubted cretinism, although deficient and variable mentality coexists with an atrophic thyroid. The patient is subject to epileptiform attacks. Sight is poor, but other special senses are good. Treatment has been intermittent, but has produced mental improvement.

Case VIII. Female, aged 58. (Dr. Macdonald.) The condition of myxœdema was very marked, and the dry, hard skin was especially noticeable on upper part of body. Thyroid gland moderately enlarged.

Case IX. Female, aged 40. Five feet four inches in height, weight 130 pounds. Goitrous, mentally imbecile, speech inarticulate, of a melancholic disposition. Never treated.

Case X. Female, aged 38. (Dr. Verdon, Abbotsford, Que.) Four feet ten inches in height, weight 105 pounds, has two sisters goitrous; is imbecile and quick tempered. Special senses seem normal except speech, which is thick and mumbling. Thyroid much enlarged; has never been treated.

Case XI. Male, aged 15. (Dr. F. G. Finley, Montreal.) Height 3 feet 11 inches, weight 87 pounds. Mother goitrous. Boy is dull and slow, speaks thickly, is markedly myxœdematous; face typically cretinoid; expression very animal-like, with the characteristic "double eyelids" and the prominent jaw. Face has an expression as if the boy were anxious to understand but could not; hands spade-like; no signs of puberty. On treatment by thyroid extract, after one year had gained 2½ inches and lost three pounds. Much thinner in face, retains the dry, harsh skin and bushy hair. Answers are prompt and intelligent; has learned to write, and can read fairly.

Case XII. Already reported<sup>5</sup> by Dr. W. G. Putnam, Yarmouth, N.S. Female, 4 years, height 29 inches, weight 23 pounds. Made no attempts to walk. Typical cretinoid expression, coarse hair, harsh skin, defective mentality. On treatment, in three months, child grew

five inches, and could walk alone. Improvement was continuous and the child became apparently quite normal.

Case XIII. (Reported<sup>5</sup> by Dr. G. Gordon Campbell, Montreal). Female, aged 5, a typical cretin. Face dull, apathetic, and of the characteristic deformity. Normal thyroid, mentality dull, used only two sounds, interpreted as "pa" and "ma." Under treatment, in one year, she gained four inches, mentally was a different child, and became physically almost normal. Whereas at the beginning of treatment, she had been in the care of a younger sister, after one year the patient had assumed charge of the nurse. This case was the third which had been under the care of the writer.

Of the above thirteen cases it will be seen that where a report was made of the thyroid, it was found atrophied or absent in four, hypertrophied in four, and normal in two. Marked myxœdema is present in only four. No notes are to hand of the condition of the fontanelles or sutures of the head or of the period at which ossification occurred.

Of twenty-seven other cases known to me, I have not been able to secure notes, therefore I merely mention that a total of 38 heretofore unreported cases exist, exclusive of cases in institutions, and that this number occurs among the practices of a rather small percentage of the profession in Canada.

Recent literature on the subject of cretinism shows little else than case reports, and the works of those who have given a special care to the subject, speak for themselves. Very briefly, it may be said that the morbid anatomy reports show a diversity of finding in the condition both of the central nervous system and of the thyroid gland<sup>4</sup>, and even in the presence of such changes as are found, we still require explanation of most of the phenomena of the disease. Careful microscopic study of post-mortem material may show much, and is to be sought. Since the morbid anatomy is obscure, it is not to be wondered at, that the etiology is in the same state. There is doubtless a disturbance of the function of the thyroid gland and a close connection with goitre, which cannot yet be explained, but which doubtless depends upon water-supply, and, it may be, geographic conditions.<sup>3</sup> A fair percentage of all sporadic cretins are the offspring of goitrous parents, and many are themselves goitrous. It is therefore in goitrous districts, and in goitrous families, that careful observation of very young children is desirable, so that early treatment may prevent the occurrence of the adult cases that are so dreadful in mental and physical deformity.

For purposes of diagnosis the mere seeing of a single case is of more value than any description, and I know of no better guide to the condition than the series<sup>6</sup> of photographs which accompanies Dr. Osler's

paper in the Transactions of American Physicians and Surgeons, Vol. IV., 1897. Should this meet the eye of any one unacquainted with the condition, he may be assured that a mental picture of the type of face there represented will be a safeguard against the neglect of any moderately pronounced case.

The treatment of the disease by thyroid extract is so well known that it scarcely requires comment. The maximum does consistent with the well being of the patient must generally be sought, and must be strenuously persevered in. To avoid the ill effects that have been described, the commercial products are safer than the raw gland, which, when kept, is found to undergo very rapid change. The dosage required for young children will be found to vary from one grain upward, and any long-continued lapse of treatment will be found to be detrimental to the patient's cure.

I gladly acknowledge my indebtedness to those gentlemen who have so kindly forwarded notes of their cases.

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5. McPhedran—*Ont. Med. Jour.* 1808.
- 3, *Vide* Dr. Charlton's article upon Goitre in this number.
4. *Vide* Ewald-Nothnagel—*Spec. Path. and Ther.* Bd. XXII.
5. MONTREAL MEDICAL JOURNAL. XXVIII. 1899.

## PRESIDENTIAL ADDRESS

BY

W. S. MUIR, M.D., of Truro.

*Delivered before the Maritime Medical Association, Halifax, July 4, 1901.*

Gentlemen,—This is a task, and a most difficult one. If you would only be satisfied with a paper upon a definite subject it would be much easier for me. Doubtless you do not desire the time of this association to be occupied by the chairman, as no doubt when I was selected to fill the chair you knew perfectly well that no other member of this maritime association could fill it to overflowing. When I look back over the list of distinguished men who have preceded me in this chair, I cannot even begin to thank you for the great compliment you have paid me by electing me president of this association. Gentlemen, it is a great honour, and one that I shall always be proud of. To try to even shadow the position so well and ably filled by such distinguished men as Wm. Bayard, Hon. Dr. Parker, Edward Farrell, James McLeod, D. A. Campbell, P. Conroy, James Christie, W. B. Slayter, R. McNeill and J. W. Daniel, is to me a great undertaking.

What strikes one most in looking over that list of our former presidents is the uncertainty of life. The Great Physician of Souls has, since our last annual meeting, been pleased to call two of our most active members and former presidents to "that rest that remaineth for the worthy departed." I refer to Drs. Edward Farrell, of Halifax, and James McLeod, of Charlottetown. On the first day of the new century, after a prolonged, brave and gallant struggle for life, that good, honest, sympathetic, able and loving man, Edward Farrell, was called to rest. Dr. Farrell's manly, straightforward bearing, his ever bright face, his ready wit, and above all his honesty of purpose, won for him the love and friendship of everyone with whom he came in contact. He was a fluent, clear, witty and most inspiring speaker. As a teacher of clinical surgery he had few equals and no superior in this Dominion of ours. When I say that with the death of Dr. Farrell the right arm of the medical profession of Nova Scotia was cut off, I mean it, as no matter what subject came up, and in what position the doctor was placed, he never sacrificed the profession for his own personal interests and many a time



he was placed politically and socially in a position where a man of less backbone would have yielded, but he was always as true as steel.

They gave him wit—so keen and bright,  
Yet steeped that gift in honey;  
A brave, strong will, well poised for fight,  
A nature warm and sunny;  
A skilful hand, whose lightest touch  
Is filled with help and healing,  
A tender hand, that gives so much  
Of sympathy and feeling;  
A gentle voice, whose charm alone  
Can still the heart's fierce crying  
By reassuring, cheering tone,  
When hope itself was dying.  
A heart, both warm and true as steel,  
Brave, resolute and plastic,  
So strong to bear, so quick to feel,  
So buoyantly elastic.  
With gifts like these from fairyland,  
Rich nature's best apparel,  
They dowered his head, and heart, and hand,  
And called him Edward Farrell.

Just ten days before, Prince Edward Island was called to bear the loss of her best known surgeon, Dr. James McLeod, a most distinguished looking personage, tall, straight and handsome, with a most striking likeness to Bismarck; slow and deliberate in speech and action, most courteous and kindly in manner. To those of us who have had the privilege as well as the pleasure of Dr. McLeod's company, one thing in particular must have left an everlasting impression upon us, that is, his strict professional bearing and abhorrence of quackery in all its forms, both in and out of the profession. Dr. McLeod was in an eminent degree truthful in all his habits, a man of sterling integrity, a bold and earnest advocate of all matters connected with the profession. Gentlemen, we have met together to-day for mutual benefit, and could we not each and all of us benefit ourselves by emulating the witness of these noble men, our former co-workers and past presidents.

We have met to-day for mutual benefit I have just said, still, how very small a gathering when you consider the fact that within the maritime provinces we have, according to Dr. Roddick's figures, 476 medical men in Nova Scotia, 90 in P. E. Island, and 243 in New Brunswick.

Think of that, gentlemen, and then look at the attendance here

to-day. All professions and trades are to-day organized and armed to the teeth except the medical profession, and if these organizations are not needed, and have not accomplished what they were organized for, don't you suppose they would long ago have ceased to exist? One reason and one great reason, for so little interest being taken by the profession at large in the different medical organizations is that there is no pecuniary benefit derived directly from our annual meetings. Men tell us that they cannot leave their work, that the profession is so overcrowded that they fear to leave home. I grant you, gentlemen, that this may be the case in some small circumscribed places, but where is that overcrowding that we have had thrown in our faces every day for the past twenty years? Not at the top of the medical ladder, I can assure you, but at the bottom, and we shall always stick there if we do no get out of ourselves and give what assistance we can to one another. It is a duty that every medical man owes to himself, his family, and his patients, that once a year, at least, he must have a holiday, and what better way can it be spent than with his co-workers in his chosen profession. Don't think for one moment that the public do not sooner or later take stock of this, and comment upon it, and hence indirectly you will reap back some of your pecuniary loss. Why do the great Canadian and American life assurance companies always ask, "What medical societies or associations are you a member of?" They always want up-to-date examiners, and they do not pick up the driftwood, I can assure you. Some will try to convince you that the multiplication of medical societies must of necessity increase the difficulties of closer and greater organization, and hence make it the harder to concentrate our energies for common good. I do not think so. These local societies must do good as feeders; and they also give men more confidence in themselves, and bring what is in a man out. No better example of this can be seen than amongst the politicians of the lower provinces, for have not four-fifths of them been started in the little local temperance lodges? They learn to spout there, of course, becoming politicians afterward. God forbid, gentlemen, that I will or shall advocate such a course for the medical man. Stick to your physic and keep out of politics if you wish to live long and die happy. You will be asked at this meeting to express an opinion as to the necessity of the formation of a Dominion Defence Association, or union, in connection with the Dominion Medical Association for the protection of the characters and interests of its members, to advise and defend or assist in defending members of that association in cases where proceedings involving questions of professional principle or otherwise are brought against them.

Let me quote from the president's (Dr. Bierwirth's) address, delivered

at the annual meeting of the New York State Medical Association, 1900:

"It is a well known fact that suits for malpractice are of almost daily occurrence, and without doubt, more than 90 per cent. are for inadequate cause and for blackmail only. It is too well known among a certain class of individuals, as well as among a certain class of lawyers, that doctors are an easy prey. They are sensitive also as to their reputation, which must always suffer from suits of this kind. They abhor publicity, and are only too glad to compromise to prevent this and save trouble. But what a different state of affairs would exist if every unjust suit for malpractice were defended by our state medical association, and if the people knew that they have to deal with a powerful society instead of a weak individual."

At the present moment Dr. Conerty, of Smith's Falls, Ontario, is fighting for his rights and honour, and by doing so is upholding the honour and dignity of his profession. For the last four years he has been dragged through the courts to defend a suit for malpractice. Many of you know the circumstances of the case as well as I do. It has aroused our sympathy. I use the doctor's name for the reason that no medical man is safe if such a case can be brought against us, and because the doctor need not be ashamed to be the defendant in such a prosecution. The medical profession, however, is not one-sided. We owe the public many duties and obligations, and we should be ever diligent and vigilant for the welfare of the community where we reside. I am afraid, however, that the tendency of the age is towards commercialism. Every action means money, and everything is weighed by the dollar. With apologies to the memory of the late Robert Ingersoll, let me suggest a title for the next president's address: "What shall we do to be saved?" Take almost any country newspaper and read the professional advertisements or cards. What do you see? In many cases pure and simple untruths. Some are to a degree true, but the idea is to bring corn to the advertiser's mill, and not a simple announcement of removal or commencing practice. The most common magnet is "late of the London hospitals," next, "late of the New York or some other post-graduate college. Now some with American degrees actually say late house surgeon, or late assistant surgeon at such and such a hospital in England. How can that be? What is the need of Dr. Roddick's bill if that is the case? Now the traveller, the post-graduate man who has been on the other side on his wedding trip or some excursion, which generally lasts from one to twelve months, fails to bring back an English degree, but is a specialist, and in almost every instance that specialty is chosen to fit the place where he settles. "Diseases of women," after the legitimately



recognized specialties of eye, ear, nose and throat, come first. And why? Chiefly because nobody can contradict the diagnosis, it is secret, and women are so anxious to be gulled. Why do not more men advertise themselves specialists upon skin diseases? They dare not! One man advertises himself, "tumours and cancers" a specialty; another, "diseases of women and children" specialties; another, "special attention given to midwifery and diseases of women." How kind! Do these men who advertise know that to advertise yourself even as a specialist in any branch of medicine or surgery will debar you from membership in the highest medical tribunal in the world, the British Medical Association? In the constitution of the Canadian Medical Association you will find the following:

"It is derogatory to the dignity of the profession to resort to public advertisements, or private cards, or hand bills, inviting the attention of individuals affected with particular diseases, publicly offering advice and medicine to the poor gratis, or promising radical cures; or to publish cases and operations in the daily prints, or suffer such publications to be made, to invite laymen to be present at operations, to boast of cures and remedies, to adduce certificates of skill and success, or to perform any other similar acts. These are the ordinary practices of empirics, and are highly reprehensible in a regular physician. Equally derogatory to professional character is it for a physician to hold a patent for any surgical instrument or medicine, or to dispense a secret nostrum, whether it be the composition or exclusive property of himself or others. For if such nostrum is of real efficacy, any concealment regarding it is inconsistent with professional liberality; and if mystery alone gives it value and importance, such craft implies either disgraceful ignorance or fraudulent avarice."

Gentlemen, I am sorry, yes, pained, to have to draw your attention to this matter, but if we ever wish to gain that respect for our profession that is necessary, we must take this matter into our own hands, as the provincial medical boards, whose duty it should be to look after such humbugging, do not appear anxious to stir up this matter. Another matter of vital importance to every medical man who has any professional connection with the Intercolonial Railway of Canada, is the ignominious manner in which we are treated by the railway and by the I. C. R. Employes' R. and I. Association. Deaf, diseased and maimed men are taken on the railway without a medical examination, and we are supposed to treat these men afterwards for \$2.50 a year, find all medicines and surgical dressings, and pay our full fares on all trains when visiting a railway employe. Then if a poor section-man is ill at an out-of-the-way station, he has to take the nearest doctor as the crow



flies, notwithstanding the fact that a special train may be passing his door several hours before the nearest doctor by the air line could possibly get there. In a few words let me say that the present arrangement, for it is only an arrangement, and not a system of medical attendance upon the Intercolonial Railway of Canada, is a disgrace to modern railroading, and could this society not pass a resolution at this meeting calling the new general superintendent's attention to this fact. I do not think that there is a doctor or man on the railway at this moment who is satisfied with the present state of affairs.

To the profession of Canada by far the most important measure since confederation is without doubt what is known to every medical practitioner in Canada as Dr. Roddick's Bill, a bill which has recently been introduced into the Dominion parliament by Professor T. G. Roddick, M.P. for Montreal. It provides for a central medical council, upon which will be representatives from each of the eight provinces of the Dominion. The homœopaths will also be represented upon the central medical council. Their representatives will be appointed by their own body. This bill also provides for examinations, and for a course of study for five years. The bill was introduced by Dr. Roddick during the last session of the House of Commons of this Dominion, but was withdrawn before the second reading for the reason, chiefly, that several of the universities and two of the provinces asked time to consider some of the details. I can state without fear of contradiction that the majority of the provinces have already practically endorsed the general principle of the bill. Some changes shall also have to be made in deference to the wishes of the larger provinces. The scheme of representation on the council outlined in the bill may have to be changed, so as to give them a fairer share of representation. I have it from the best authority that Dr. Roddick will present his bill early next session, and that a committee composed of all the medical men of the House of Commons, with two or three lawyers, will be formed to receive and hear any grievances or amendments presented by delegates from the various provinces. We must all admire the wonderful amount of skill, tact and pluck that our most distinguished friend and benefactor, Dr. Roddick, has shown in the management of this prodigious undertaking. Like a well-fed child, his scheme gains weight and strength daily without exciting antagonism in any quarter.

In looking over the programme of work that is for our deliberation during this meeting, you will be pleased to note the number of papers upon matters vital to the whole country at large. I refer to the burning question of the hour, tuberculosis. I will not dwell upon this matter, as there are others down upon this programme to speak upon this

mighty subject who are better qualified to do so. The recent tuberculosis conference held at Ottawa has brought this subject before the eyes of the whole Dominion, and if that meeting has done nothing more than setting the public thinking, it has done a vast amount of good. One point worthy of more than a passing thought is, that no matter what tuberculosis conference you attend, no matter what sanatorium you visit, by far the most enthusiastic, zealous and devoted person present is one who is or has been himself a "lunger," or who has had those ever near and dear to him under sanatorium discipline. What better evidence of the absolute necessity of sanatorium treatment and discipline do we require than that?

Take up the White Man's Burden,  
The savage wars of peace;  
Fill full the mouth of famine  
And bid the sickness cease.

When the versatile Kipling penned the "White Man's Burden," I wonder if it ever entered his mind what has made this burden a task? What a pleasure the advance of science would have been had one common tongue or one universal language been continued?

The "Tower of Babel" has had many things said about it, still I do not think that anyone will object to my saying that the diversity of tongues has been a great obstacle to the advance of medical science. Many say that with one common tongue we would lack that patriotic spirit that is absolutely necessary in any nation; others say that a universal language is only of value in commerce, nowadays when competition is so keen, and the demands upon our time so great it is impossible for a man to cultivate a foreign language and become a linguist. Still we must thank Providence for the rapidity with which the English language has increased during the past 100 years, for in 1800 only twenty millions of people spoke English; in 1900, 116 millions. During that time the German language only increased one million, the French 21 millions. As the white man goes south, obeying the command of Scipio, "carrying war into Africa," when our cousins to the south of this Dominion forget the doctrine of James Munro, what do we see? Upon both continents to the south of the Anglo-Saxon and Teuton, disease and pestilence fading before the science of sanitation.

Can any sane man stand up and say that at the present moment smallpox and diphtheria are not under control, that inoculation in typhoid is not worthy of a trial, and that we are not cornering up tuberculosis? Let these anti-vaccinationists read what vaccination has done for Cuba since the blowing up of the Maine. Cuba before the introduc-

tion of Anglo-Saxon rule was the hotbed for smallpox in America, and within three years the ever wide-awake and scientific American has completely stamped that disease out of all the towns. Why the different boards of trade never take up the great question of sanitation in relation to quarantine is astonishing, as sanitation must in time overcome to a great extent all quarantine restrictions.

Gentlemen, I thank you for your kind attention, and let me say that we have come here to-day to consult and confer about the interests of our profession, a profession demanding the profoundest learning, widest research, the most patient and painstaking discrimination; it is the profession of humanity, for all its labors are for the physical amelioration of a suffering race. There is no cry too feeble to catch the ear of the physician; the wail of the new-born babe, the moan of the pain sick sufferer, the gasp of the outcast dying in misery, alike touch a chord in the heart of the noble, humane and philanthropic physician.

# CASE OF RUPTURED INTESTINAL TUBAL PREGNANCY, WITH SEVERE HEMORRHAGE INTO THE ABDOMEN— OPERATION AND RECOVERY.\*

BY

A. LAPHORN SMITH, B.A., M.D., M.R.C.S.,

Fellow of the American and British Gynæcological Societies; Professor of Gynæcology in the University of Vermont, and of Clinical Gynæcology in Bishops University, Montreal; Surgeon-in-Chief of the Samaritan Hospital, Gynæcologist to the Montreal Dispensary; Surgeon to the Western Hospital, and Consulting Gynæcologist to the Women's Hospital, Montreal.

Mrs. G. F. L., 30 years of age, began to menstruate at 14. Never had any pains, but the flow was profuse. She was married at 18, and her husband died at the end of three years, without her ever having become pregnant.

Immediately after her marriage she had a severe attack of cystitis and pelvic peritonitis, and as her husband had the reputation of having been dissipated before his marriage, his wife's illness was in all probability gonorrhœal, although his death from consumption renders it possible that it was tubercular. She had several other similar attacks, but milder in form during the three years. After remaining a widow for one year, she married a second time at the age of 22, after which eight years elapsed without her ever having become pregnant, during all of which time her periods recurred with great regularity until two periods ago, when for the first time she missed one period, and again a month later she missed another one. Six weeks from the time she missed the first period, about ten a.m. on the 22nd of March, she was leaning forward in her house, when she felt something break, and she was taken with a terrible pain and such weakness that she had barely time to make a rush for her bed, on which she fell fainting. During these six weeks her breasts swelled and she was troubled with morning sickness, and she believed herself, as indeed she was, pregnant. A neighboring doctor was at once sent for, who gave her a hypodermic of morphine, but as she was much worse that night, he was sent for again, when he gave her something to quiet her nerves, but apparently did not realize the seriousness of her condition. Next morning she told her family that she felt she was dying, and that the doctor did not understand how ill she was, and to send for another doctor.

Dr. Warren was then called, and arrived there at 10 a.m., just twenty-four hours after the fainting spell, and learning that she was supposed

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\* Read before the Clinical Society of the Montreal Dispensary, April 26, 1901.



to be pregnant after a long period of sterility, and that she had been taken with a sudden pain and a fainting spell, and finding here pulse 160 and her hands and feet cold, he diagnosed at once a case of ruptured tubal pregnancy, and insisted that I should be called in consultation. Unfortunately I did not get the message until nearly 3 o'clock that afternoon, at which hour I was due at another consultation, so that it was exactly 5 o'clock on the afternoon of the second day when I saw her. In addition to the symptoms which were related to me as above, I noticed that her abdomen was quite distended with fluid or semi-fluid material, there being only a little resonance on percussion in the centre of the abdomen, all the rest being dull; and although on examination no solid mass of any kind could be felt, even the tubes and ovaries being apparently normal, as felt by bi-manual palpation, still I had no hesitation in agreeing with Dr. Warren's diagnosis, and I urged that the patient be at once conveyed in an ambulance to the Samaritan hospital for operation. The husband of the patient, however, could not be found before half-past six, and the lady would not leave her home without his permission. Full explanations as to what had to be done and why it had to be done at once were left with several members of the family, with directions as to how she was to be conveyed to the hospital, and eight o'clock was fixed as the hour for the operation. On going to the hospital, however, at that time, the patient had not arrived, and Dr. Warren could not be found, so that nothing could be done but wait, as the patient resided some miles away at the other end of the city. I feared that the reason for her non-appearance was that she had died shortly after my visit, as at that time her pulse was hardly discernable, and her appearance was very unfavorable. However, at half-past seven next morning I received a telephone message saying that she was still alive, and asking whether I was still willing to operate; but though I again urged them to send her at once, in spite of my endeavors it was after nine o'clock before she reached the hospital. In twenty minutes after her arrival, or two days less forty minutes from the rupture, her abdomen was opened, when there was a considerable gush of bright red blood. No time was lost in clearing this away, until the source of the hæmorrhage was found; after trying first one tube and then the other, and finding neither of them ruptured, although the right one was closed and full of liquid, the uterus was drawn up, and then the source of the hæmorrhage was seen to be the rupture of an interstitial tubal pregnancy, occupying an area as large as a gypsy-nut, and situated half-way between the centre of the fundus and the left cornu or the portion of the left tube which passed through the wall of the uterus. This was quickly closed with a double layer

of catgut stitches, the first one being very firmly tied and obliterating the cavity, the tube and the ovary on this side were taken off, but the right ovary was left, and the right tube had a new pavilion made on it so as to give a free passage from the ovary to the uterus; then about a gallon of blood, partly liquid, but including many large clots which had formed under the stomach on the left and under the liver on the right, was removed. As there still remained many small clots among the coils of the intestine and under the folds of the omentum the abdominal cavity was washed out twice with a gallon of sterilised salt solution, after which the water came away pretty clean. The patient before the operation had a temperature of 96 1-2 degrees, but her pulse could not be counted, so two quarts of sterilized salt solution were left in the abdomen, and as soon as she was put back to bed a pint of salt solution was thrown into the rectum, and repeated every two hours all day, with the result that by night she had a distinct pulse of 150 and a temperature of 98. By next morning the pulse had come down to 120 and the temperature had risen to 99; and 48 hours after the operation the pulse and temperature were both 100, after which she made a rapid recovery, being up and walking around her room three weeks later, and returning home in four weeks and a few days.

There are several points of interest about this case; the first is that it is not the first, nor the second, but the fifth case of tubal pregnancy which has been sent to me by Dr. Warren, and the question naturally arises how did he come to have four cases in his practice when many other doctors have never had one, and my answer is, although it may not be the correct one, that it is because he is looking out for these cases; no doubt another doctor might have had this case in his practice—and indeed did have it—without ever having suspected the condition, and when the patient died, as she certainly would have, she would have been registered as a “death from heart failure from ‘Grippe.’”

The second point is that although in some cases death ensues very rapidly after the rupture of the tube or of the uterus, yet in this case hæmorrhage had been going on steadily for 48 hours, and yet the patient was able to bear this serious operation, including much manipulation of the bowels, and still make a rapid recovery. Third, a tube and ovary were left in order that she may have another, and it is to be hoped, a normal pregnancy; although it is not quite certain that this is the wisest course to pursue, owing to the number of cases on record of a second tubal pregnancy occurring in the remaining tube, and fourth, that this is my sixteenth case of tubal pregnancy without a death; they have been reported in groups of twos and threes about the

time they occurred, and in most of the cases the names of the family physicians were given, except in one case the diagnosis was made by one of my fourth year students, on the person of his landlady, who, on his return from my lecture on this subject, and hearing her describe her symptoms, told her that was just what the doctor had been lecturing on that morning, and at once called me to see her. And on operating on her a few hours after at the Western Hospital, a ruptured tubal pregnancy was found.

From this experience I am inclined to take a very favorable view of the prognosis, and it behooves every practitioner to keep the possibility of this condition in mind, for if this were done, I feel confident that my sixteen cases would soon be increased to twice or three times that number.

## A CASE OF METASTATIC STREPTOCOCCAL INFECTION.

BY

A. MacKENZIE FORBES, M.D., C.M., Montreal Dispensary, Montreal.

In these days of transition in the treatment of disease, when the younger generations are losing faith in the old empirical methods, and when science has but recently awakened and shown us not only the bacterial origin of so many diseases, but also demonstrated what theoretically is the rational treatment, it is perhaps the duty of those who have opportunity to test any of the less frequently used so-called anti-toxins to report any progress made by their patients after such rational treatment has been employed, so that statistics may be formulated the practical and clinical value of what theoretically is absolutely rational, and science has proved to be true. Feeling thus, the writer is desirous of placing before you the record of a patient treated by him while suffering with a metastatic and polymorphous streptococcal infection.

On the 12th May last the writer was called to a youth of 21 years of age who gave the following history:—Three days before, May 9th, he had noticed a couple of red papules surmounted by white heads situated just below the right knee. Being annoyed by the slight irritation they caused he had scratched them with a needle. On the next day, May 10th, the areas surrounding the two pimples were slightly painful, but it was not until May 11th, that he noticed an erythematous blush surrounding the original lesions, and extending up over the superficial lymphatics to the saphenous opening. This condition was so painful, and he was so feverish and unwell, that he felt unable to attend to his ordinary duties. It was not, however, till the afternoon of May 12th that the writer was called in and found the patient to be in a high fever with a temperature ranging about 104° F., and a pulse running in the vicinity of 112. Examination demonstrated the condition already described, namely, an infective dermititis situated below the right knee and extending over an area of about three or four inches in circumference with an additional lymphangitis extending from the before mentioned lesion to the glands situated over the saphenous opening.

These lesions seemed to improve greatly under the influence of simple general methods and the local application of the ordinary hospital *lotio plumbi subacetatis*, but the writer was disappointed to find a slight swelling, which presented no signs of fluctuation, over the head of the right tibia when the patient was visited on the 14th May. This, how-

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\* Read before the Clinical Society of the Montreal Dispensary, June 14, 1901.



ever, resolved under the influence of an ice bag, and everything appeared to be getting on nicely, the dermatitis decreasing in extent each day, until May 19th, when another swelling was observed situated over the anterior surface of the ankle joint. This presented no sign of fluctuation and was treated by ordinary simple methods until the next day, when fluctuation being palpable, it was incised and one and one-half drachms of thick pus evacuated. Another development of importance was noticed for the first time on this day, a slight erythematous blush appeared over the left malar eminence. This was diagnosed as an infective dermatitis, a metastasis from the infection already observed on the right lower extremity.

It is interesting to note that this erythematous patch, although being of an erysipelatous appearance, did not present the definite raised border, the oedematous full red appearance of this streptococcal infection, although it was felt that it and its forerunners were certainly the resultants of the pathogenic infection which was due most likely to a variety of streptococcus.

On this, and subsequent days, treatment with antistreptococcal serum was considered as the temperature, apparently of the septic or church steeple variety, often reached and passed  $104^{\circ}$  F., but the experiences of those who had already tried it were such, and the possibility that the antitoxin employed might prove to be only antidotal to other of the numerous varieties of streptococci, than those which apparently caused this infection, were sufficient to persuade the writer that such treatment was not yet indicated.

On May 21st, the erythema was observed to have slowly advanced to the bridge of the nose in spite of treatment by the constant application of lead lotion, and this continued to advance till the next day, when it seemed to have reached its height, having covered both the right cheek and ear. The disease, and the temperature, which for the past few days had ranged between normal and  $104^{\circ}$ , seemed to have reached their fastigium, and the crisis was expected when on May 25th the patient complaining of slight pain over the right knee, and examination having demonstrated fluctuation, an incision was made and half a drachm of pus evacuated. May 26th and 27th passed by uneventfully except for the fact that towards the evening of the latter day a very slight erythema was observed over the forehead. On May 28th the erythematous blush on the forehead had spread and increased to a more definite dermatitis and the eyelids became oedematous and red. The temperature on this day reached  $104.4-5^{\circ}$  at 3 p.m., and the pulse-rate numbered 124. The patient's condition seemed to indicate any treatment that had ever proved efficacious in any case, consequently, at 3.30 p.m., 20cc. of the

antistreptococcal serum of the Pasteur institute was injected subcutaneously in the lumbar region. The injection was painless and was not followed by ill-effects. His evening temperature on this day reached 105°.

May 29th. The patient was generally, but not markedly, improved. His temperature reached one-fifth of a degree higher than on the preceding day, and a second injection of the same amount and serum was used.

May 30th. The patient's condition was greatly improved, the temperature on this day not reaching higher than 102 4-5°. A third injection of a like amount of the same serum was employed.

May 31st. A further improvement was noticed, his maximum temperature on this day being 100 2-5°. A fourth injection of 20cc. of serum was used.

June 1st. When he was visited the temperature had not been over 99 1-5°, but as there was one small area of slight erythema about the size of a ten cent piece it was thought advisable to inject into its borders a solution containing 1-20 of a grain of bichloride of mercury. This, as is often seen with this drug, caused an intense inflammatory reaction, with a slight rise of temperature, but both inflammation and temperature, soon disappeared under the use of an ice bag.

June 3, 4, 5, 6th. The patient's condition was good, the temperature never rose higher than normal.

This case draws attention to two points of interest:—Firstly, it is worthy of note that this patient appears to have been peculiarly susceptible to infection. He has informed the writer that just a year ago he was confined to his bed for some days after being vaccinated, and further, was unable to attend to his ordinary duties for some weeks. Secondly, it is interesting to note the almost immediate fall of temperature and improvement in condition after the use of the antistreptococcal serum, and although this improvement cannot be definitely attributed to the serum, still the result is worthy of note.

In closing, it may be stated, that the clinical diagnosis of a streptococcal infection was verified by cultures taken from the pus of the abscesses opened. These gave cultures showing many streptococci associated with a few staphylococci.

## CASE REPORTS.

BY

G. GORDON CAMPBELL, B.Sc., M.D.,

Lecturer in Clinical Medicine, McGill University, Montreal; Assistant Physician to the Montreal General Hospital.

### **Scybalous Masses in the Rectum of an Infant.**

On April 24th, 1901, Mrs. G. brought to me her infant, a boy, aged 15 months, complaining that the child screamed with pain every time his bowels were moved.

The child was a little over average size, somewhat anæmic, the muscles rather soft, with a large head and large abdomen. There were no signs of rickets and the abdomen seemed quite soft on examination. The child had been nursed for two weeks, and was then fed on cow's milk, except during the hot months of last summer, when condensed milk was substituted for it. Latterly he had been given bread and porridge and other plain foods with the milk. Shortly before Christmas he had an attack of what the physician in attendance called membranous croup, but had quickly recovered and lost very little weight at the time. The bowels had always been regular, except during this attack, when he had suffered from constipation.

Just after the attack of croup the mother noticed that the child had sudden pains at irregular times and not associated with the movements of the bowels. Since then he had been perfectly well except for the fact that every time he had a motion he screamed with pain, and seemed to dread having his bowels moved, catching hold of her and showing unmistakable signs of fear before each stool. He slept well, was of a most cheerful disposition, had a good appetite, and had a motion of the bowels of a natural colour two or three times a day. She had rarely required to give him a purgative, and had never noticed anything wrong with the stools except on two occasions, four and two days ago respectively, when he had passed a small quantity of blood.

There was no evident cause for the pain made out by external examination, so I asked Dr. Cameron to chloroform the child the following day, expecting to find either a fissure of the rectum or polypus. It was difficult to obtain a good view of the mucous membrane, but nothing more than a slight superficial erosion could be seen. On introducing my finger, however, I found the rectum dilated and filled with a number of hard scybalous masses, eight of which I succeeded in removing with the finger. They were quite hard, rattling on the tray they were

placed upon like stones, of a light yellow colour, facettèd somewhat like gall-stones, and the largest one, which was the nearest to the anus, was an inch in diameter. Removal of the hard masses was followed by complete relief of the symptoms.

**Severe Facial Neuralgia Occurring as the First Secondary Symptom of Syphilis.**

A young, well-nourished girl, nineteen years of age, came to the Out-Patient Department of the Montreal General Hospital on December 6th, 1898, for relief of a severe neuralgia of the right side of the face. She gave the following account of her illness:—The pain had begun three weeks previously, and became progressively worse. It exhibited a remarkable regularity in time of onset, beginning at about three o'clock every afternoon and lasting well on into the early morning hours. During the morning and up to three in the afternoon she was entirely free from it. She had never suffered from neuralgia before.

The patient was slightly anæmic, and examination showed no evidence of any disease in the circulatory or respiratory systems. There was acute tenderness over the nerves at the supra-orbital, infra-orbital and mental foramina on the right side of the face. The nose and throat showed nothing to account for the neuralgia, and the teeth were fairly good. She was given cod liver oil, with small doses of strychnine and powders of acetanilide for the pain. Three weeks later the pain was still severe and small tender ulcers appeared on the mucous membrane of the mouth and pharynx. I did not recognize their nature, but attributed them to the neuralgia, looking on them as probably herpetic in origin.

The treatment failed to give even temporary relief, and it was not until March, 1899, three months after her first visit that the problem was solved, when one day I was asked to see her at her house. I then discovered that she had a well marked eruption of secondary syphilis over the trunk and extremities, with general glandular enlargement and sore throat. She stated that she had had a labial chancre over four months previously and it was still present. Treatment with a grain of grey powder four times a day promptly relieved the neuralgia and caused the rash and ulcers in the mouth to disappear.

The occurrence of severe neuralgia as the first symptom, with the exception of the primary sore, of syphilis, is, I think, worthy of being recorded. Headache or pain in the head distinctly worse at night always suggests syphilis as a possible cause, but the absence of all signs of the disease, when the first examination was made, wrongly led to its exclusion.



**Vesical Irritability and Pain following Moderate Doses of Quinine.**

J. D., male, aged 30 years, consulted me on February 17th, 1901, for what he called "a bearing-down sensation in the lower part of the abdomen." On questioning him, I found that the uncomfortable feeling he complained of was a sense of weight and pain over the hypogastric region, relieved temporarily by emptying the bladder; and that there was slightly increased frequency of micturition. He had always been in good health with the exception of an attack of grippe seven years before, and was just recovering from a slight attack of the same disease. He attributed his symptoms to the grippe as he had suffered in a similar way after the first attack. He had had a mild attack of gonorrhoea one year after the first attack of grippe.

Enquiry as to how he had been treated, revealed the fact that he had been given quinine on both occasions; he could not say how much during the first attack, but in two days had taken twenty-four grains for the last attack. He remembered distinctly that the physician who treated him for the first attack had told him that he could not find any cause for the symptoms complained of, and he had then consulted a second, but without receiving much benefit, although a most careful examination had been made and his bladder washed out. The condition had gradually improved, and disappeared completely in three or four weeks. He was quite positive that he had never taken any quinine between the two attacks, as he had never had a day's illness.

I think there can be no doubt that this was a case of vesical irritation from quinine, even though the amount taken was not large. It is well known that some persons show a special idiosyncrasy to the action of quinine, most of the cases of severe cutaneous lesions following its administration having been caused by relatively small doses. Then, too, irritation of the urinary tract is recognized as an occasional untoward effect, instances having been recorded in which a condition resembling acute nephritis resulted from moderate doses of quinine.

# RETROSPECT OF CURRENT LITERATURE.

## Medicine.

UNDER THE CHARGE OF JAMES STEWART.

### Early Tuberculosis.

E. L. TRUDEAU. "The Importance of a Recognition of the Significance of early Tuberculosis in its Relation to Treatment." *Medical News*, June 29, 1901.

Trudeau enters a plea for the early diagnosis of tuberculosis. The results obtained in sanatoria have demonstrated that the disease is curable, and curable in direct proportion to the stage at which treatment is applied. Thus, at the Adirondack Cottage Sanitorium, during 1897-'98-'99, of 113 incipient cases, 82, or 72 per cent., were discharged apparently cured.

The diagnosis of incipient tuberculosis often presents many difficulties. Persistent slight cough, with loss of flesh and strength, a slight rise in temperature of one-half to three-quarters of a degree, and considerable lassitude are symptoms, which, even without any appreciable signs on physical examination, point in many cases to incipient tuberculosis, but which are too often disregarded. Too much importance should not be attached to an absence of abnormal physical signs, as all rational symptoms are often present before the disease can be detected by physical examination. Miliary tuberculosis, infection of the deeper portions of the lung or of the glands, may fail to show any abnormal signs. Search for the bacillus should be begun early and persisted in as long as any doubt as to the diagnosis exists. When the bacillus is found there is no appeal from its decision, but its absence from the expectoration is not a conclusive criterion.

In the great majority of cases a consideration of the history of the case and a careful study of the rational symptoms, with a thorough examination of the chest, a microscopic examination of the sputum, aided by a careful X-ray examination where necessary, will enable the physician to make an early diagnosis. If this cannot be done, the tuberculin test frequently leads to a definite conclusion, and either re-

assures the patient or leads to a definite diagnosis with prompt and radical measures of treatment. Although not often required, it is in the detection of incipient cases that its most general usefulness lies. Where any marked degree of fever is present it is less reliable, as the balance of the heat regulating centres in such cases is already disturbed, and the injection may cause fluctuations of temperature which are misleading. In skilful hands its more general application will warn the patient and physician and result in saving many lives.

Trudeau's experience in going over many hundreds of clinical histories leads him to believe that in the majority of cases months or even-years are lost before the patient's danger is realized.

Unless the all-important bearing of an early diagnosis in the successful treatment of the disease is more generally realized, the results of open air treatment in many institutions projected or built will be disappointing.

### **Pancreatitis.**

MAYO ROBSON, F.R.C.S. "An Address Delivered before the American Surgical Association. *Brit. Med. Jour.*, May 11, 1901.

The writer points out that obstruction of the lower end of the common bile duct must necessarily lead to obstruction of the pancreatic duct. There is, however, no pathognomonic sign to show that the pancreatic duct is occluded unless it be the extremely rapid loss of weight. Fat necrosis affords an important clue, but can only be detected when the abdomen is opened. Glycosuria, lipuria and fat in the stools occur too seldom to be of much use in diagnosis, although when present they are of great diagnostic value. Direct injury is sometimes a cause of acute pancreatitis and a fatal case is related from a slight blow on the abdomen. It seems probable that in abdominal operations for gall-stones, injuries to the pancreas are not infrequent. Owing to the proximity of the duodenum and the opening of the duct of Wirsung, with the opportunities for infection, it is a matter for surprise that pancreatitis is not more frequent.

The essential cause of pancreatitis is bacterial infection, and as in bacterial infection of the liver, biliary and pancreatic lithiasis, injury, gastro-intestinal catarrh, ulcer and cancer of the stomach, zymotic disease, such as typhoid or influenza, are determining factors, though in some cases pancreatitis has come on suddenly in individuals in robust health. The frequency of gall stones in the causation of pancreatitis was forced on the writer by the frequency with which he found enlargement of the head of the pancreas in operations for cholelithiasis.

*Fat Necrosis* is a splitting of fat into fatty acids and glycerine, the

latter being absorbed and the former remaining in the cells in combination with calcium salts and forming yellowish-white patches of varying size in the subperitoneal fat, omentum and mesentery. Fat necrosis is found in association with pancreatitis, although also present under other circumstances. Flener and others regard the fat necrosis as due to the escape of the fat splitting ferment from the pancreas to the tissues immediately surrounding it, and thence by contiguity to the adjoining and even distant part of the abdomen and thorax.

*Hæmorrhage.*—Local hæmorrhage into the pancreas may occur apart from injury or any general hæmorrhagic tendency, and although recovery may ensue, yet such hæmorrhages may lead to death, with symptoms of collapse and dyspnœa, in the course of a few hours. This may occur in good health and without premonitory symptoms. A hæmorrhagic tendency also exists in cancer of the head of the pancreas, and in several cases of pancreatic disease operated on hæmorrhage has been the direct cause of death. As a result of operative experience the writer believes that in jaundice severe and even fatal hæmorrhage is apt to occur when complicated with pancreatic disease. This tendency can be successfully combated by the free administration of calcium chloride. It may be concluded that in pancreatic disease there is a strong tendency to hæmorrhage, a tendency which is much increased by the presence of jaundice.

*Pathology of the hæmorrhages.*—There is some reason to think that the glycerine set free by the pancreatic fat necrosis may be the cause of the local hæmorrhagic condition in pancreatic disease. Experimentally, glycerine injected into mice, even in minute quantities, produces hæmaturia or hæmoglobinuria, and in the human subject blood has been seen in considerable quantity after the injection of iodoform and glycerine to the uterus in certain cases of tubercular disease of the tubes.

As a diagnostic aid in the recognition of pancreatic disease Cammidge has shown that urine in this condition treated with an oxidising agent, and then tested for sugar with phenyl-hydrazine gives a positive result. In cases of catarrhal jaundice and a number of other conditions the test is negative. Although tried in too few cases to warrant any positive statement, this test is well worth further trial. The blood in two cases showed a marked diminution of the blood plates, and whatever the cause it may be connected with the hæmorrhagic tendency.

*Treatment of acute pancreatitis.*—In the acute infective form the treatment is practically that of an acute peritonitis of the upper abdominal zone. The pain at the onset is usually so intense as to require the administration of morphine, and the collapse indicates stimulation. The symptoms are too indefinite at the onset to warrant surgical inter-



ference, and until the collapse passes off it is unjustifiable. The simulation of intestinal obstruction will probably lead to efforts to secure an evacuation of the bowels to relieve distension. If an exploratory incision establish the diagnosis, a posterior free incision in the costo-vertebral angle will allow the whole organ to be freely examined, and gives free vent to the gangrenous and necrotic tissue.

Subacute pancreatitis is more amenable to treatment, although it is usually attacked only after there is abscess formation. There is, however, no good reason to delay treatment to this stage. Distension, if present, may be combatted by stomach washing and turpentine enemata, or by the administration of calomel. Surgical treatment is conducted on the same lines as in the acute affection.

In chronic pancreatitis the treatment should be by abdominal section and drainage, but in this case the drainage is indirect and through the gall bladder as in cholecystotomy.

### Hyperacidity.

H. ILLOWAY. "Hyperacidity." *New York Medical Journal*, May and June, 1901.

This paper is based on a clinical study of 23 cases of gastric hyperacidity. The writer's results bring out the fact strongly that the diagnosis of hyperacidity cannot be made by chemical tests alone. Although cases presenting the clinical features of hyperacidity usually show a larger amount of free acid, yet there are exceptions to this rule. In the normal stomachs examined the total acidity ranged from 46 to 74, and the free hydrochloric acid (estimated by Mintz's method) from .04 to .51, whilst in cases presenting symptoms of hyperacidity the total acidity was from 52 to 120 and hydrochloric acid from 13 to 64. It is obvious from these figures that different stomachs must have a physiological individuality of their own, and that an amount of acid readily tolerated in one case will, even in smaller amount, give rise to symptoms of hyperacidity in another.

The affection may present itself in an acute or chronic form. The writer does not consider "latent hyperacidity" as a morbid condition, as the variations of acid in health are so considerable that no strict line can be drawn between the pathological and physiological amounts.

Patients suffering from hyperacidity usually maintain their nutrition, although frequently of spare habit. The appetite is fair, and in many very good. Even where food has been abstained from for fear of aggravating the trouble, the appetite usually returns after the first good meal, and the experience that no evil results therefrom. Vomiting is rare, and was only present in one of the 23 cases. Acid ejecta are sometimes

seen with gastralgic attacks. They cause a burning sensation in the stomach, and cause a numb feeling in the teeth—a sure sign of free hydrochloric acid.

Pain is a prominent and important feature. It may range from a sense of pressure in the epigastrium to an acute gastralgic attack, being in most cases between the two extremes. It comes on at certain periods of the day, some two to four hours after food, and in the intervals there is comparative freedom. Occasionally violent gastralgic attacks occur either at night or at the regular time after meals and terminate by the acid ejections already referred to. In the 23 cases pain was felt in 13, in early all of a “dull, dead character with a gnawing sensation.” It is relieved by taking food, bicarbonate of soda or Vichy water, or even by plain warm water to dilute the acid juice.

Eructations are absent except at the termination of a gastralgic attack, and on this point the writer lays some stress in the diagnosis of the condition.

Tenderness is present over the stomach during the pain, but absent, according to Riegel, in the intervals.

As to the cause of hyperacidity, the writer does not agree with certain other writers that the condition is a neurosis, although there is a neurotic element in some cases. He regards constipation as an important factor, a large proportion of patients presenting this symptom before the onset of gastric trouble, and its correction always gives much relief. Irritants, such as alcohol and rich food are also regarded as factors in its production, whilst nervous influences as seen in hysteria, or neurasthenia, overwork or worry have a minor influence in inducing the condition.

In the treatment, alcohol and tobacco are entirely prohibited, also acid drinks and condiments. Constipation is treated by massage in preference to drugs. The writer believes in nitrogenous food, and not in a carbohydrate diet as is now recommended by some writers. Milk is a valuable adjunct, and is able to take up and bind a large amount of free HCl. Drugs do not play an important part in the treatment, a little Vichy water for the painful sensation is usually all that is required, and it is usually left off as the pain disappears.

*F. G. Finley.*

## Gynaecology.

UNDER THE CHARGE OF WILLIAM GARDNER.

### **Pelvic Diseases Among the Insane.**

HENRY, W. O., M.D., "Insanity in women associated with pelvic disease," *Ann. of Gyn. & Ped.*, February, 1901.

"A large majority of all insane women have some pelvic disturbance as an important, if not a chief, causative factor," and early and radical treatment of those so affected is highly important.

Morel states that the brain is the seat but not always the cause of insanity, and Kohlberger, More Madden, Kraemer, Skene, Rohé and others hold the same views. The latter considers that puerperal insanity, melancholia, and simple mania are the forms of insanity which are chiefly amenable to treatment of diseased pelvic organs.

Many gynaecologists will not operate upon any patient who shows any taint of insanity, as they fear to precipitate an attack of mania, but this is a great error on their part, as the operation is far more likely to cure than aggravate the condition.

In the London, Ontario, Asylum, Hobbs found some pelvic lesion in 188 out of 220 women who were examined. Of these, 173 were operated on, and, as a result, 42 per cent. *recovered* mentally, 24 per cent. *improved* mentally. 2 per cent. died, and only 32 per cent. remained mentally the same. None were made worse by the operation.

Dr. Henry appends a list of some sixteen cases in which he operated with excellent results. He considers that gynaecologists who operate upon the insane would get better results if they were not so conservative.

### **Malignant Disease of the Uterus.**

KNOTT, VAN BUREN, M.D., "Sarcoma of the Uterus," *Annals of Surgery*, February, 1901.

The writer studied reports of 118 cases of uterine sarcoma which had been reported during the last ten years. He divides the disease into three groups; viz., (a) that arising in the mucous membrane, (b) in the parenchyma, and (c) in the cervix.

Those arising in the mucosa were supposed to be the most common, but it is difficult to determine the exact site of origin, as those springing from the parenchyma are apt to grow downwards towards the

uterine cavity. Circumscribed sarcoma of the mucosa are very rare, and did not occur once in the 118 cases. These may readily be mistaken for polypi, as they have similar characteristics.

When sarcomata of the uterine parenchyma are circumscribed, as is usually the case, they closely resemble intra-mural fibroids, but these have a distinct capsule, whereas the sarcomata have not. So great is the resemblance between these two forms that tumours, supposed to be fibromata, have been removed, but have recurred, and closer investigation showed them to be sarcomata.

Of all sarcomata, that originating in the chorionic villi is the most malignant, and therefore its early diagnosis and prompt and thorough removal are highly important. Fortunately, it is the most rare form of this affection. In any case, where persistent uterine hæmorrhage continues after pregnancy in spite of repeated curettings, and where the uterus continues to enlarge, it is necessary to decide whether or not the uterus is the seat of deciduoma malignum.

#### **Cancer of the Female Genitals.**

KYNOCH, PROF. CAMPBELL. "Primary Carcinoma of the Female Urethra." *Brit. Med. Jour.*, May 18th, 1901.

The urethra, both in man and woman, is very rarely affected with cancer. This is especially the case when the growth is primary, but holds good to a very large extent when the disease spreads from neighbouring parts, that of the cervix much more often spreading to the bladder than to the urethra, the patient usually dying before the latter is reached. In 311 cases of uterine cancer Gusserow found that the urethra was affected 56 times and the bladder 128 times. Many cases of cancer affecting the tissues around the urethra are mistaken for primary urethral growths, as the latter are not seen in time to differentiate between the two forms without very careful investigation.

Urethral cancer may be found at all ages, but is especially liable to occur after the menopause.

Melchiorj classifies urethral cancer as follows:—(1) Only affecting the lower half of the urethra, (2) that involving the neck of the bladder and the pelvic fascia, (3) when extending to the symphysis and surrounding parts. Early recognition is important as regards prognosis, but this is, as a rule, unfavourable.

#### **Vesico-Vaginal Fistulæ.**

MCGANNON, M. C., M.D. "Vesico-vaginal Fistulæ." *Am. Gyn. & Obstet. Journal*, May, 1901.

In 1845, Dr. Marion Sims wrote that "a fistula in the bladder—big or little—is absolutely incurable," but, fortunately for womankind,



he immediately set about his investigations, which resulted in his famous successes.

The essentials for success in operating for the relief of this condition are a knowledge of the anatomy of the part, proper denudation and adjustment of the surfaces to be united, and absence of any tension upon the line of sutures. The recognition of the anterior vaginal wall and posterior wall of the bladder was the cause of many of the earlier failures of vescio-vaginal operations.

In the case reported by the writer, the recto-vaginal septum was divided half way up to the cervico-vaginal septum, the anterior wall of the bladder was intact as was also that of the vagina up to the junction of bladder and urethra. Above this, the anterior wall of the vagina and base of the bladder up to the cervix were gone, and the opening gaped from one side of the vagina to the other.

When operating, the bladder wall was dissected from all of its attachments for some distance, and its edges united by fine catgut. The entire vesical opening was thus closed, after which the vaginal mucosa was drawn over this raw surface as far as possible, silk-worm gut sutures being used. One ureter still opened into the vagina. Thirty days after the first operation a ureteral catheter being passed into the ureter through the urethra, a channel was made from the ureter to the urethra by means of a strip of vaginal mucosa. This was completely successful, and a few days later the recto-vaginal septum was repaired.

*F. A. L. Lockhart.*

## Reviews and Notices of Books.

A PRACTICAL TREATISE ON MEDICAL DIAGNOSIS. By JOHN H. MUSSER, M.D., Professor of Clinical Medicine in the University of Pennsylvania, etc., etc. Fourth Edition, Revised and Enlarged. Lea Brothers & Co., Philadelphia and New York, 1900. Price,

The rapid sale of the third edition of this valuable work soon exhausted the supply, and the author took advantage of the demand for a new edition to thoroughly revise the book. While there is not much increase in the number of pages, we note many small alterations, all of which we think are in the direction of improvement. Thus, for example, he now places Raynaud's disease and the following descriptions of pathological conditions under the heading "skin" instead of "fingers," as in the former edition. In many parts a rearrangement has been made of the paragraphs, so as to make the more important points more prominent.

A paragraph on lymphatism has been introduced, and attention drawn to the liability to sudden death in the subjects of this condition.

There is noticeable improvement, too, in many of the coloured plates. This is especially marked in those of blood conditions, which were not up to the standard in the older editions. The new plates of pernicious anæmia and of the forms of leukæmia are excellent representations of the stained blood smears. Addison's disease is also depicted by a new and better plate.

Many of the diagrams used in the section on Diseases of the Lungs and Pleura have been replaced by simpler and more explanatory ones, and the same is true of the diagrams illustrating the valvular lesions of the heart.

A plate by Wichmann showing the relation of the segments of the spinal cord to the sensory areas has been introduced in the present volume, and the author has added a table, modified from those of several other writers, of the spinal segments involved in motor innervation and reflex functions.

That this is the most practical of all published works on medical diagnosis in the English language is, we think, now admitted by all. While its large size, over 1,100 pages, makes it a ponderous volume to recommend to students, we do not see how any part of it could be omitted without destroying much of its value, and for the practitioner, who desires to keep abreast with the increase of knowledge on methods of diagnosis, it fills every want. We have much pleasure in again recommending it.

T H E

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

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## KOCH AND TUBERCULOSIS.

Once more Koch commands the attention of the medical world with the somewhat startling statement that he finds, as the result of his investigations, such a difference between the bacilli of human and of bovine tuberculosis that, in his opinion, the latter may be practically disregarded as a source of human infection. This opinion he founds: 1st. Upon carefully conducted experiments which show that cattle and swine may be inoculated with the bacilli of human tuberculosis with impunity; and, 2nd. Upon the comparative rarity of primary intestinal tuberculosis in mankind. Both these foundations, at the Congress, met with strong criticism, and will require careful investigation.

The fact that human tubercle bacilli appear to be comparatively innocuous to cattle by no means proves the converse. As Lord Lister said, in proposing a vote of thanks to the lecturer, the bacilli of tuberculosis may to some extent resemble the virus of smallpox, which we know is so extremely difficult to inoculate into cattle that until recently it has been regarded as distinct from that of cow-pox. Now we feel sure they are the same, for Copeman has shown that if the virus of smallpox be passed through the monkey there is then no difficulty in

inoculating the cow with the virus thus modified. Although, however, this difficulty of inoculating the cow with unmodified human virus exists, the converse does not hold true, for there is no difficulty in inoculating the human system with vaccine virus. That infection of man by bovine tuberculosis is not impossible is proven by the numerous cases reported in which accidental inoculation with bovine tubercle has infected the human subject.

The second statement of Koch that primary intestinal tuberculosis due to infection by bovine tubercle bacilli is extremely rare, although in opposition to the statement of many English pathologists, is in close agreement with the conclusions arrived at by many continental and American investigators. Koch, in his address, quotes the post-mortem records of the Charity Hospital, in Berlin, where only ten cases of primary tuberculosis occurred in five years, and Biedert's statistics, who, in 3,104 post-mortem examinations of tuberculous children observed only 16 cases of primary tuberculosis of the intestine. In comparison with these we would call attention to Northrup's series of 91 autopsies at the New York Foundling Asylum, in 88 of which the primary seat of infection was in the bronchial lymph nodes, and in only three did it appear to be through the intestinal tract. More recently, Comby, of Paris, stated that out of 211 autopsies in children under two years of age, 28 were tuberculous, and in every one of these 28 the portal of infection was through the respiratory tract. It is to be remembered that primary infection through the alimentary tract does not warrant the assumption that the infection was necessarily derived from bovine sources through food; it is quite as likely that the infection may have been due to some contamination of food by the widely diffused bacilli of human tuberculosis.

These views of Koch met with strong opposition, not only from English physicians, but also from many French, German and American physicians, who feel convinced that we have reasonable grounds for regarding tuberculous cows' milk as distinctly dangerous to human beings; and it was the common sentiment of the Congress that all the available resources of science should be directed to the prosecution of experiments tending toward the proof or disproof of this latest statement of Koch's. All physicians, however, will emphatically endorse the statement made by Koch that the main source of the infection of tuberculosis is the sputum of tuberculous patients, and that measures directed to combat the spread of this dire disease must aim chiefly at the prevention of the dangers arising from its diffusion. To this end Koch advises obligatory notification of all classes of consumption, enforcing on the patient and the public generally the necessity for the



disinfection and destruction of infected sputum, and the disinfection of houses in which consumptive patients have resided. To further these ends he recommends the establishment of sanatoria, not only for the cure, but for the education of those in the earlier stages, and special hospitals for those in the later stages of the disease. To the furtherance of these most important measures we desire to render all the assistance in our power.

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### POISONING BY MOONSEED BERRIES.

In a recent number of the *Medical Record*, there is reported a case of poisoning in Sharon, Pa., by the fruit of the common moonseed. Three boys who had eaten the berries developed symptoms which led to the suspicion of strychnine poisoning, the cases ending fatally. In the investigation which followed they were found to have eaten the fruit of the *Menispermum Canadense*, a climbing plant whose leaves closely resemble in shape the leaves of the common English ivy, but are much thinner and lighter green, and not evergreen. The fruit which consists of black berries covered with a fine bloom, is not unlike the wild frost grapes, for which it is often mistaken by children. The rhizome and rootlets of the plant form the officinal *Menispermum* of the U.S. Pharmacopœia, which was introduced some years ago as a substitute for sarsaparilla.

The moonseed is quite common along the banks of rivers in this province and from its rapid growth and white flowers in loose panicles, is not uncommonly grown as an ornamental and shade vine about the verandahs and outhouses of summer residences. So far as we have been able to discover, attention has not previously been drawn to the poisonous properties of the berries. The fact that the berries in this climate do not ripen until late in autumn may account for the absence of cases of poisoning in this neighbourhood, the majority of summer residents return to town before the berries ripen. It is well, however, that the public should recognise the poisonous nature of the plant.

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The United States Consul-General at Vienna in a recent report to the State Department, furnishes some interesting information regarding the sale of secret nostrums in Austria. We reproduce from the *Medical News* portions of his report from which it will be seen that the great Republic has yet something to learn from "the effete monarchies of Europe."

"The sale of 'arcana' or secret remedies has always been strictly forbidden in this monarchy. Trade in such medicines and advertisements of the same are under strict surveillance of the law. Further, those medicinal preparations of which the prescriptions are not open to in-

spection by physicians, or in the prescription of which the substance of the medicinal ingredients cannot be definitely recognized as to kind and quantity, may not be kept for sale in apothecaries. Only those manufactures may be considered as pharmaceutical specialties that contain drugs acknowledged to be medicinal remedies, as, for instance, balsam copaiba, oleum santali, and the like.

"Every new medicinal preparation intended for use by the public must be reported to the authorities, and its sale may not be begun until said authorities have found no reason to prohibit the same. Prescriptions of foreign medicines must be accompanied by precise directions for their preparation from the foreign manufacturer, and be provided with his signature and business stamp. Altogether excluded are cosmetics that by their labels, wrappers, and advertisements are affirmed to be efficacious in the removal of personal blemishes—impure skin, freckles, liver spots, and baldness—and are, therefore, qualified as remedies.

"The regulations in Austria in regard to the advertisement of patent medicines are likewise strict. All laudatory notices in local publications of cures and remedies coming from abroad constitute a transgression of the trade laws, and, under certain circumstances, foundation for complaint of unlicensed medical practice."

Consul Hossfeld of Trieste transmits, under date of July 12th, a report covering the same information. He adds:

"The Austrian law also undertakes to regulate the prices to be charged for patent medicines, for it provides that whenever the reasonableness of the price of such a remedy is questioned, it shall be rated on the basis of the official tariff promulgated in the pharmacopœia Austriaca.

"Those of our manufacturing chemists who are disposed to take the Austrian public or sanitary authorities into their confidence will probably not find it very difficult to obtain the necessary permission for the sale of their products, but I doubt whether any business which they may do in this country will ever prove a source of great profit to them."

#### DEATH OF AN EMINENT FOREIGN PROFESSOR.

Joseph Fodor, M.D., Professor of Hygiene at the University of Budapest, has recently died. He was born in 1843, studied under Pettenkofer at Munich, and later under Baron Liebig. Dr. Fodor was, after his master Pettenkofer, the best known of the European sanitarians, and did much toward rendering Budapest the healthy and beautiful city it now is. He was a man of many gifts, and was for some time joint editor of the medical journal *Orvosi Hetilap*.

## Proceedings of the McGill Medical Society of Undergraduates.

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### SURGERY OF GASTRIC DISEASES.

BY

J. W. McNEIL.

The Surgery of the Stomach, for disease or other conditions, did not exist as such previous to 1875. The stomach was of course occasionally wounded and recoveries did occur, as evidenced by such cases as St. Martin, the French Canadian, who was such a contributor unconsciously to that branch of physiology as well as surgery. Prof. Keen says, "The operation of gastrotomy and gastro-cæsarean section is as old as the Christian era., but these operations were only performed when the surgeon was driven to it, and in almost every case with a fatal result. It is indeed only in the last 25 years that this department of surgery has been revolutionized.

Where the surgeon stood by with folded arms, content only to smooth out the last few hours of the unfortunate patient by the inevitable morphia with the occasional administration of its consort, whiskey; now the most radical operations are undertaken, not only with that extreme boldness which characterizes the profession of the present day, but with a success which, if it were not for our familiarity with the same, we would consider little short of a miracle. Imagine Gentlemen, one of the surgeons at our hospitals (our professors) standing by and refusing to operate for the perforation of a gastric ulcer! With our knowledge of the subject, we would consider it a crime. Yet this was precisely the state of affairs 25 years ago.

Now what are the factors which have made operation on the abdominal viscera a possibility? They are three:—

1st. Anæsthesia. 2nd. Antiseptics. 3rd. Experiments on the lower animals. Every one will agree that without the former two, the thought of such extensive operations would be the wildest day-dream. Since their introduction the surgeon has no fear of cutting down upon this important organ.

In 1875, two German authorities resected the intestines of 35 dogs, 29 recovered and in the following year Hussenhien resected 7.



The knowledge gained by these operations was, 1st. That the surfaces of the stomach unite by first intention; 2nd. That there is no digestion of the mucous membrane in the neighbourhood of the wound.

The experiments proved also that the operations did not interfere with the motor or secretory functions of the organ.

The question of sutures and knotting, and the best form to use and other minor details were also settled.

In 1877, Czerney for the first time sutured the intestine and had a good result. In the same year, Billroth did the first gastrorrhaphy and total resection of the bowel.

In 1878 and 1879 were performed the first resections of the stomach for tumor. Then followed gastro-enterostomy and pyloroplasty and partial gastrectomy and a perfect storm of operations in and about the stomach. Even the entire removal of the organ was performed with a fair measure of success. Indeed, the time is near at hand according to Jenner, when the stomach shall be opened for diagnostic purposes.

Now what are the operations and the results of the operations which are performed for diseases of the stomach?

The operation of gastrolisis, or the removal of the stomach from its attachments to surrounding organs, must of necessity be limited, especially when this accident is the result of a perforating ulcer. But when the adhesions are from other causes as gallstones and peritonitis, though exceedingly difficult to diagnose, good results have been reported from the operation.

In the *Indian Medical Journal* of '98, a case is reported of a woman, aged 44 who had persistent daily vomiting for 18 years, at irregular intervals. In six weeks, under the treatment of a physician she lost 16 pounds and was in danger of dying from starvation. The stomach was opened and found attached to the bowel below. The adhesions were separated and the patient made a good recovery. So that this condition is of some surgical importance.

*Gastrotomy.*—The term was first used for any opening of the abdomen, now it is confined entirely to the operation of opening of the stomach. The indications for the operation are;—1. To remove foreign bodies. 2. In case of stricture of œsophagus. 3. For ulcer of the stomach. 4. For exploration.

The operation for removal of foreign bodies was first performed in 1602, but it was not till 1880, that it was undertaken with any degree of security. It is perhaps interesting to note the amount and variety of articles found in the stomach.



Fennel reports a case in the *Lancet* of '98 of a man who came to the London hospital and who had taken from his stomach 192 nails, (most  $2\frac{1}{2}$  in. long) buttons, hair, etc., the total weight being 1 lb.  $9\frac{1}{2}$  oz. Another case reported by Meisenbach, in which he found 187 staples, screws, horse-shoe nails, wire nails, cartridges, knife blades, besides an ounce of glass, the total weight removed being 1 lb 11 oz.

The operations for stricture of œsophagus are two:—(1). By immediate dilatation or repeated dilatation and little at a time. (2). Temporary gastric fistula till dilatation is complete.

*Gastrostomy* is the establishing of a permanent opening into the stomach. No operation is perhaps more important to the general practitioner. For we do not know the time when we will be compelled to do this operation, from stress of circumstances.

The indications for the operation are:—(1) Non-malignant stricture of œsophagus and cardiac orifice of the stomach, and such conditions as tumors pressing on the œsophagus at this point. 2. Malignant disease of œsophagus and cardiac end of the stomach.

The operation was first performed in 1849 according to the literature, and up to 1875, 28 cases had been operated upon with a mortality of a 100 per cent.

It was first performed successfully by Sydney Jones in 1875. A great deal of opposition existed among surgeons owing to the high mortality, it being considered useless and dangerous. Since 1884, the mortality has been steadily decreasing. Of the first 163 cases operated upon 133 died, giving a mortality of 81 per cent. Gross, in the *Transactions of the American Surgical Association* of '84 shows a mortality of 29 per cent. Later in 1891, Pomers in *International Journal of Surgery*, a mortality of 27 per cent. for malignant and 18 per cent. for non-malignant cases.

Mikulicz, in 10 gastrostomies for non-malignant stricture of œsophagus did not lose a case, and of 34 malignant strictures 7 died, showing a mortality of 20 per cent.

There is perhaps little doubt that the high percentage of mortality was in part owing to the delay in performing the operation and when it was performed as a last resort rather than to relieve an obstructive condition. Mikulicz says, according to Meyers, that the operation should be performed when it is difficult to pass fluids and semi-solids and when the patient shows a steady decrease in weight.

I will not here even attempt to name the number of operations and modifications but will content myself with two, the first one performed and the one adopted in this University.

The first was performed by an incision parallel to the lower border of the ribs. The stomach was sutured to the abdominal wall and time allowed for the formation of adhesions; then an opening was made directly into the stomach. The difficulty of such an operation is quite apparent, the opening being large and unprotected a considerable regurgitation of stomach contents took place producing excoriation of the surrounding skin and rendering the subsequent history of the patient most miserable.

The operation performed here is a vertical incision made to the left of the median line. The stomach is drawn well forward and sutured to the anterior wall, an incision is then made into the stomach and a small rubber catheter introduced well into the cavity.

A purse string suture is introduced and tied tightly around the catheter. The catheter is now pressed in further causing the stomach wall to invert, and another row of purse string sutures followed by a second inversion is followed by a third row of sutures; so we have a tube leading into the stomach lined by peritoneum. The catheter is taken out in a few days and patient fed by a silver one.

*Gastro-enterostomy*.—The anastomosis of the stomach to some part of the intestine.

The conditions which call for this operation are malignant and non-malignant stricture of pylorus, and ulcer of the stomach; and Dr. Keen says that a fourth may yet be accepted, namely, obstinate digestive trouble which has not yielded to purely medical treatment.

The result of operation for stricture of the pylorus is most encouraging. One case operated on last year by Dr. Garrow, I think is worthy of notice.

The patient, a woman of 39 years, suffered with gastric symptoms for 10 years. She was unable to retain any food and became extremely emaciated only weighing 92 lbs. when her former weight was 135 to 140 lbs. When she was operated on a firm mass was found at the pylorus which was not defined, at least not demonstrated, if I remember rightly. A gastro-enterostomy was performed, using Murphy's button; she made an uninterrupted recovery and in three weeks had gained 16 lbs. When she left the hospital she appeared to be enjoying perfect health. The success of such an operation is beyond dispute.

The operation was first performed by Walfler in 1881.

Between '81 and '85, thirty-five cases operated on showed a mortality of 61 per cent. Since that time the mortality has been decreasing, the non-malignant cases going as low as 7 or even 4 per cent., the malignant cases remaining about the same.

However it is probable that the progress of the disease and not the operation, is in many cases the cause of the fatal termination. In the earlier operations, a factor responsible for a certain proportion of deaths, was that the first presenting portion of intestine, was attached to the stomach wall.

In some cases, the point of anastomosis was near the ilio-cæcal valve, leaving a large portion of the intestine, excluded, thus diminishing digestion and absorption, the patient ultimately dying of inanition. Now the circumstances have changed. The surgeon does not satisfy himself with any portion of the intestine presenting, but endeavours to obtain that portion of intestine lying 20-30 inches below the pylorus.

The difficulty of obtaining the proper loop is quite apparent. Most surgeons direct one to seize the first portion presenting and hand it to the assistant. If in following the bowel down it will become thin; if up, it will be thickened and pale.

Another difficulty, and one of very great importance is the union of the intestine to the stomach wall without regard to peristalsis. The result being that the food instead of going into the distal portion of the intestine, goes into the proximal, producing what might be called a vicious cycle.

If the pylorus were not thoroughly closed, it would produce vomiting, of bile, food and pancreatic fluid. If it were not patent then the outcome would be extreme dilatation of this portion of the intestine. To overcome this, several operations have been devised. Von Hacker recommends puckering the proximal end by transverse suture through the lumen of the intestine.

Launenstein's is perhaps the best, but requires considerable time; he advises the anastomosis of the proximal and distal portions of the intestines. In addition to these difficulties another arose. As the intestine was passed over the transverse colon the weight often produced obstruction with disastrous results.

In order to overcome this, a hole was made in the mesocolon, but as the intestine was yet attached to the anterior wall of the stomach, gangrene was liable to occur from destruction to the blood vessels. For this reason Von Hacker in 1875, adopted the method of posterior gastro-enterostomy, thus avoiding the danger of gangrene and at the same time facilitating the passage of food into the intestine, more especially when the patient is in the dorsal position. He prevents a hernia occurring by suturing the margins of the vent made in the mesocolon to the stomach wall.

*Pyloroplasty*.—The enlarging of the pyloric orifice was first per-



formed by Heineke, and almost as soon by Mikulicz, the two men after whom the operation is most frequently called.

The indications calling for such an operation are essentially non-malignant stricture, from any cause. The advantages of the operation in favorable cases, where the pylorus is not greatly thickened, over such an operation as gastro-enterostomy are fairly evident, but where there is a gradual thickening, it would hardly be so permanently successful as an artificial opening.

The operation may be (1) Heineke-Mikulicz, where the pylorus is incised transversely and sewed up vertically, or (2) Loreta's, where an opening is made into the stomach and the pylorus forcibly dilated. This has two objections. The liability to recurrence and it carries a high mortality of 31 per cent.

*Pylorectomy*, or the excision of the pylorus, need only be performed for one condition, that is malignant disease of this portion of the organ as any other can be overcome more easily by gastro-enterostomy or pyloroplasty, but cases must necessarily arise as in other parts of the body, where the surgeon is in doubt as to the true nature of the tumor with which he has to deal (in fact his diagnosis should be made before any tumor is noticed) in such cases especially in persons advanced in years. Pylorectomy is the only safeguard; for malignant disease no other operation can be compared to it. Gastro-enterostomy is only palliative and pyloroplasty an impossibility.

Hemmets says, "To operate.—(1) When there is dilatation of the stomach. 2. When cachexia exists. 3. When there is absence of hydrochloric and excess of lactic acid. 4. When there is hæmatemesis.

The success of the operation depends upon the size of the tumor and the extent to which the glands are involved. It must of necessity depend on an early diagnosis, for if the glands about the stomach and between the stomach and colon are involved, it does not require a great knowledge of surgery to see that removing the pylorus and leaving the glands would be a perfectly useless as well as a dangerous operation and for this reason. I quote the words of Dr. Fenwick of Edinburgh, who says:—

It may be accepted as a practical rule that the occurrence of chronic gastritis without definite cause in a person over 40 should always be regarded with suspicion. If at the end of a month, the complaint has not yielded to careful treatment or if the patient continues to lose flesh and suffers from pain and vomiting after the use of fresh milk, while the stomach contains food in the early morning without free hydrochloric acid, the presence of malignant disease may be regarded as a certainty, even without the presence of a tumor."



The two methods of operation most frequently performed are Kocker's resection, followed by an end to end anastomosis (gastro-gastrostomy) with or without a Murphy button. Or Czerney performs a gastro-enterostomy, and after resection closes the cut ends.

The other operations which are performed for diseases of the stomach, and they are many, I have not even attempted to touch upon, as I feel I could not do them even the limited justice which these have received and because I have already overtaxed your patience and imposed upon your good nature more than is my prerogative.

## TRAUMATIC SYNOVITIS.

BY

J. T. HOPE, '01.

It is a well known fact among the laity that morphine relieves pain, but very few among them understand its physiology or physiological action, or methods of administration, and so the medical man who in dealing with a case does not fully understand how, why and when to apply his treatment is little better off than his lay brother. I shall therefore in this paper try to deal with a few points in a thorough manner rather than with a mass of theoretical matter which is not capable of practical application.

This subject was suggested to me partly by seeing the large number of cases at the Montreal General Hospital during the icy period of last winter: partly by the recollection of a case which occurred during my High School Course, of which I was fortunate enough to be a witness to the injury, the method of treatment—in so far as I remember it—and the ultimate recovery. It was as follows:—One day at school one of my companions, a lad of 18 or 20, while practising the “hitch kick” gave his knee a severe twist, the whole weight of his body being upon the foot which landed first upon the floor. The pain was sudden and intense, the knee began to swell rapidly; it was with difficulty he was able to walk home where he at once took to bed. Next day on seeing him I found the knee hot, painful and swollen to such an extent that the knee-cap was floating. A physician was called in, the injured member was put at rest, the joint freely painted with iodine, then bandaged and after some three weeks in bed the patient was able to be about again, though the joint remained weak for some time necessitating his wearing an elastic stocking for about two years, after which period the joint was as strong as before.

This is a fairly typical case and serves to illustrate how a trifling injury to a joint like the knee, may incapacitate the unfortunate victim of it for a long period.

In looking over the reports of such cases for the past two years at the General and Royal Victoria Hospitals, I find the predisposing causes in nearly 50 per cent. of cases to be due to blows on or about the joint, over 30 per cent. to be due to falls and the remainder to twists, strains, etc.

In acute cases the symptoms are those of an ordinary inflammation,

viz.:—pain, swelling, heat, redness at times, together with loss of function of the joint; fever may or may not be present.

The pain sets in at once, or, within a short time after the injury: It is increased by motion of the joint, by pressure upon it, by a dependent position of the limb, and is frequently worse at night. In the early stage it is due to a hyperæmia of the synovial membrane resulting from a vaso-motor paralysis of its smaller vessels as a result of the injury, later to the distension of the surrounding tissues and structures about the joint.

The heat present is due to the passage of a greater amount of blood in the vessels of the parts, to the exudation of serum from those vessels and to hyper-secretion of synovial fluid from the lining membrane itself.

The distension forces the joint to assume the position of greatest ease, hence we find it relaxed and somewhat flexed. If the effusion is great, fluctuation is detected; bulging takes place where the capsule is thin, therefore in the elbow we look for it on either side of the triceps tendon, in the knee about the patellar ligament, or, above the patella if the quadriceps bursa communicates with the joint. Frequently the patella is floated up from the condyles and "rides." The circumference of the knee-joint may exceed that of its fellow by two or more inches (according to the reports of the Royal Victoria Hospital.) Such a joint laid open would show an increase in the amount of synovial fluid which might be found normal, thinned by effused serum, or turbid by admixture with leucocytes and lymph in the more advanced cases, and dark colored if blood was effused. The membrane would be found swollen and congested; the capsule and other parts vascular and discolored; the cartilage alone retaining its normal clear white color.

With proper care such a joint becomes less hot and painful as the inflammation is arrested; the tissues become less vascular the excess of fluid is absorbed and the joint recovers its normal appearance and function.

The first step in the treatment is rest. Rest for the affected part to promote its recovery and rest for the system in general to modify vascular excitement and so limit effusion.

The latter we can reinforce by constitutional treatment. In strong and healthy subjects a saline purge will lower blood pressure and clean the system of toxic material, which might lower the vitality of the tissues and render the affected part more liable to disease, while its weakening effect may assist in reconciling the patient to his surroundings and make him take more kindly to the necessary confinement, sick diet, etc.

In weakened and debilitated subjects on the other hand, stimulants and tonics are indicated, and should the pain be sufficient to prevent rest and sleep, anodynes may be given with advantage. The joint is immobilized by splints or by sandbags and a cradle is placed over it to keep away the bed-clothes. Most surgeons place the limb in the position of comfort (semi-flexion). Others in severe cases, place it in the most useful position should ankylosis occur. Having placed the limb at rest, the next step is to check the inflammation and relieve the pain. Of all agents the best and most easily applied is cold. Heat also relieves the pain but does not so readily check effusion but rather promotes it. Cold is applied preferably in the dry form until the inflammation subsides. The part is covered with a layer or two of flannel, then a rubber bag or a bladder filled with ice, or, a Leiter's coil (cold water) is placed over the part. Cold constricts the vessels, assists absorption and relieves pain. It is not well borne by the old or very feeble. Wet cupping, leeches, etc., are also useful at this stage, but are not so satisfactory.

If cold is not available, the pain may be relieved by hot fomentations. Flannels are wrung out of hot water, a few drops (15 or 20) of turpentine or other rubefacient placed upon them: the joint is enveloped and the whole covered with oiled silk, or waxed paper. When cool it is removed and another put on. In the absence of a better remedy I have found hot fomentations of ordinary vinegar and water do very well.

Having relieved the pain and checked the inflammatory process, which may take a day or two, the next step is to promote absorption of the effusion. The means at hand are compression, counter-irritants massage, the douche, and intermittent heat. The first three are those usually employed, either singly or combined. Compression greatly promotes absorption and is found to give the best results. It is applied by adhesive plaster, a rubber bandage, or, by plaster of Paris direct.

In the knee-joint, (which is the one affected in about 90 per cent. of cases), the joint is carefully covered with a thick layer of cotton batting for 6 inches above and below. The popliteal space is padded so as to cover the ham-string tendons. Strips of rubber or adhesive plaster are then placed over this, beginning 4 or 5 inches below and overlapping each strip by about one-third till the same distance above is reached, the ends of each strip are brought together or overlapped behind; in this way pressure as firmly as can be borne is made over the swelling. Over all place a muslin bandage. When the swelling goes down apply more on top, or better, remove and apply a fresh one. Plaster of Paris, as ordinarily applied, also gives excellent results. Of astringents, counter-irritants, etc., Lead and Opium, Iodine, Ichthyol



and Mercurials all have their advocates. Tinct. Opii and Liq. Plumbi Subacetatis, drachm each to a pint of water is the strength usually employed. It may be applied cold or hot. In the former flannels are wrung out of the cold solution and laid over the affected part. It may also be applied warm and covered with rubber or oiled silk. It may be combined with pressure as directed above.

**IODINE:**—Tinct. of iodine diluted with equal parts of alcohol is the strength preferred. It is best painted over the affected part with a camel's hair brush or with a feather. One or more coats may be applied but if used too frequently is apt to vesicate. For children it should be diluted 1 in 4. Should it cause too much pain, relief may be given by applying cloths soaked in cold water or cold milk.

**ICHTHYOL:**—The ointment of ichthyl, 50 per cent. for adults 25 per cent. for children, may be rubbed on the joint two or three times a day. It has the disadvantage of possessing a highly disagreeable odor.

**MERCURY:**—Blue ointment spread on lint and thus applied is also efficacious. It also is apt to vesicate a tender skin.

Scott's dressing, emp. ammon. hydrag. combines medication with pressure and is extensively used in hospital practice with satisfactory results.

Massage has many advocates. The general belief among members of the profession is that it is too much neglected. Possibly the skill and labor required in carrying it out taxes the ordinary physician's time too much. It is especially good in the chronic stage, when the pain and tenderness have subsided somewhat, but the joint is still weak and the fluid unabsorbed. One eminent physician reports the cure of six chronic cases which were massaged for 15 to 25 minutes daily.

Blisters, in the later stages, have also proved of value. They have the disadvantage of leaving an abraded surface which has afterwards to be healed. Applied for short intervals every day or two to different aspects of the joint, and supplemented by pressure, they sometimes do well. Cleanse the part thoroughly before applying them. Should they vesicate, drain off the fluid and assist healing by zinc ointment.

The actual cautery has been used with good results: the ordinary hot iron or the Paquelin cautery may be used. Heat the instrument to a dull red and draw it quickly in parallel lines about one inch apart, avoiding all bony prominences. These lines may be supplemented by others at right angles. Apply compresses wet with sterile cold water, or some other mild aseptic lotion.

In spite of such heroic measures, some cases still resist treatment in

skilled hand, as the following one from the Montreal General Hospital reports shows.

E. T. aet. 21, occupation "Ballet Dancer" received a blow on her knee which set up a synovitis, was treated by Drs. Shepherd and Molson for two months. Nov. 5th, admitted to hospital. Nov. 8th, Joint cauterized. Nov. 20th, Scott's dressing applied. Dec. 6th, blistered with cantharides. Dec. 7th, blistered with cantharides followed by zinc ointment. Dec. 11th, cauterized under ether. Dec. 18th canth. plaster. Jan. 17th, students report says "knee is more painful, more swollen and stiffer than before." Jan. 20th, patient discharged.

Having exhausted the usual remedies at hand, the next step is to aspirate and draw off the superabundant fluid. This should be done before the capsule and ligaments have become over-stretched or the synovial membrane too altered by adhesions, villous growths or organized lymph. It must be done under most thorough aseptic care. Enter the needle where the capsule is thin, draw off the fluid, seal with collodion and gauze, then immobilize the joint. The fluid withdrawn is usually normal, but it may be flocculent or dark and blood-stained. It may be copious.

In one case at the Montreal General, it amounted to 12 oz. from the knee joint. After aspiration, should fluid again return, it is usually in diminished quantity and is readily reabsorbed. When the affection is of long standing and the condition of "Hydrops Articulī" is established, some surgeons get excellent results by aspiration, irrigation of the joint by sterilized water followed by the injection of a 2 or 3 per cent. solution of carbolic acid and immobilization. This should not be done while any inflammation exists. Should immobilization too long continued, end in ankylosis and massage, passive motion, etc., fail to restore the function of the joint, break up the adhesions under ether. After recovery most joints require support for some time. This may be done by keeping it securely bandaged, or better, by the use of an elastic stocking. The patient's health must also be looked after.

Should infection take place, as indicated by rigors, high body temperature with pain, redness and marked oedema of the joint, free incision and drainage with antiseptic washes must be carried out. Such joints recover their function completely if ulceration and organization has not gone on too far. Among the reports examined at both hospitals no such case occurred. The following facts which I have gleaned from them may be of interest. The time which elapsed from the injury till the patient had to lay up varied from a few minutes to three weeks or more. Time spent in hospital from 3 to 75 days, average 31 days. The number of recurrences were fairly numerous. The severity of the injury was no index to the prognosis; cases showing most severe

symptoms often recovered speedily; some in which the injury was slight and the symptoms sub-acute ran a most chronic course.

Exposure to cold and over-use may set up an inflammation identical with that caused by injury, but such could scarcely be looked upon as of traumatic origin.

In conclusion, a synovitis in itself is not an affection dangerous to life, yet occurring, as it mostly does, among those engaged in the active pursuits of life, its results are all the more keenly felt and the possibility of its maiming his patient for life should stimulate the physician to do all in his power to bring it to the best possible termination.

## RELATION OF ENVIRONMENT TO EVOLUTION.

BY

A. F. MACKENZIE, B.A., '01.

Evolution may be briefly defined as the derivation, or gradual development of the higher and more complex forms of life from simpler and more homogeneous ones.

There are two great theories of the origin of life, one, that each distinct and separate group of plants and animals came into being in obedience to the will of a great "First Cause," was independently created. the other that all forms of being which at present exist, are derived or descended from one or a few pre-existing or primordial forms in harmony with the principles of heredity and variability. This latter is in short the theory of organic evolution and it is into this theory that I propose to enquire for a few moments this evening, not for the purpose of proving its truth or otherwise, for that I confess is a task far beyond my ability, but to see if possible what part environment has played in the production of the many animals we see around us, so different and yet, as evolutionists would tell us, of a common ancestry.

Of the modern school of thought Charles Darwin is, without doubt, one of the greatest exponents. Let us look for a few moments at the grounds upon which he based his beliefs and into the theory he lays before us.

The marked likeness which exists between entire large groups of animals becomes even more marked if traced backward to their ancestors: the still more marked similarity which shows itself during the embryonic life of those different groups; the study of fossils and the discovery in these of a succession of related forms which would seem to serve as the links necessary to complete the chain of evidence; the study of domesticated animals which led him to believe that it was impossible for all the different races to have sprung from distinct wild stocks; these and many other facts are the foundation stone upon which Charles Darwin based his theory. According to him the two great factors in evolution are heredity and variability. It is well known and universally admitted that like tends to produce like. Further, if one group of beings differs from its fellows in some particular, it tends to transmit this peculiarity to its offspring. Still more would this be the case if the group in question mated with another group which possessed the same peculiarity. The particular feature would tend to be handed down in even more marked degree. This is taken advant-



age of by breeders of various domestic animals and works changes almost incredible. Is such a selection going on in Nature? Darwin would say, yes. Every being, which during its existence produces one or more of its kind, must during some period undergo destruction; otherwise on the theory of geometrical progression its numbers would very quickly become too great for the means of support. Hence, as more individuals are produced than can possibly survive, there is a struggle for existence, one individual with another, and with its surroundings and conditions, that is with its environment.

That animal survives which is best fitted for the conditions under which it is forced to live.

Variations take place in domestic animals which man by methodical selection uses to obtain new races. It cannot be thought improbable that variations also take place in Nature and under natural conditions. Among many of these one would probably occur which would give the individual possessing it an advantage over his rivals, and in the struggle for existence he would have the best chance of surviving. This peculiarity would be transmitted to his progeny and would give them a better chance for continued existence. Life is a constant struggle with environment and those whose characteristics fit them best to bear the exigencies of that environment will be the most likely to survive. This is the theory of natural selection or of the survival of the fittest. It does not state that natural selection tends to produce variability but only to the preservation of the variations which arise and are beneficial to the being under the existing conditions of life.

If, as before stated, men can, by taking advantage of any variability which appears in domestic animals, produce such great changes, should not the process of natural selection accomplish infinitely greater results? Man, by methodical selection, can act only upon external and visible characters; Nature chooses only those characters which are useful to the being in question. She can act on every internal organ and upon even the most minute shade of constitutional difference, and in a struggle for existence so intense the most minute advantage—the most minute difference may turn the balance in favor of the individual possessing it, again, man can act at most upon a few generations while Nature acts for ages.

What part does this natural selection play in the production of new forms? Take for example one species of animal in a confined area. All animals possessing an advantage, or varying in the right direction will tend to be preserved. If this area be large, its several districts will certainly present different conditions of life, the surrounding conditions, the environment, in the different areas will differ, and only those suited to different regions will survive. Thus we will have several

varieties produced. The largeness of the area as regards environment plays a more important part than the isolation of the different races. But one may object that these varieties do not differ from one another as widely as do species. True, but varieties are species only in the process of formation, or as Darwin calls them, incipient species. How then does the lesser difference between varieties become augmented into the greater difference which exists between species? We have, say, three varieties of the same species modified by variability, or adaptation to environment, and if these multiply naturally and at their natural rate, they must necessarily migrate, come into relation with new conditions come into new environment which will tend to still further increase the varieties and the differences between them. When one considers that the process goes on through ages, it can easily be understood how a new species might arise. The more diversified the modifications the antecedents acquire, due to variability and environment, the more places will the progeny be able to occupy. The multiplication and divergence in character will go on, the modified descendants will multiply and take the place of earlier and less improved branches, and ultimately we get a new and well defined species.

We thus see that in this theory of evolution there are two factors, the nature of the organism itself and the nature of its surroundings. The different varieties have arisen from the co-adaptation of life to its environment, the different species from this co-adaptation continued through countless ages.

But the question arises, is this variability due merely to the chance occurrence in an individual of a species of a peculiarity which is merely by chance favorable to its continued excellence? Does this variation arise haphazard, and are those which are useful transmitted to the descendants producing varieties and ultimately species; or does environment tend to modify the individual? According to Darwin, environment might be said to occupy a passive function, as it were culling off those who were unable to bear its privations, and allowing those who by chance were fitted with a variation which was favorable to continue to live. It of course cannot be doubted that the struggle for existence is universal and that the fittest survive, but later authorities have held that Darwin paid too much attention to this principle and attempted to explain too much by it. He scarcely, if at all, attempted to explain variation, and failed to see deeper facts underlying it. He regarded variations as spontaneous, that is, that it was not possible to assign them to any definite cause. Recognising this difficulty a later school of evolutionists has been founded by Lanarh. They attempt to explain variations by importing consciousness which they regard as a fundamental property of all protoplasm, and they state that this con-

sciousness determines the direction which the activity of the cell shall take. For example, hunger leads to migration which changes the environment. This directly influences the individual and causes a certain number of changes, but the greater number are attributed by them to the use or disuse of parts, the results of which they claim is inherited. Environment is by them thus made to occupy a secondary place, and consciousness and peculiarities arising during life are claimed to be the great controlling factors. This Weismann denies :—He believes that what the individual becomes is determined by the ovum itself and that any variations which show themselves must arise from variation in the ovum itself. Brooks combines the two theories, those of Darwin and Weismann.

The sum up then, if we are to accept the theory of Darwin, environment exercises as it were a passive function in evolution. The origin of species is due to variations very minute, which arising spontaneously give to the individuals possessing them an advantage over its rivals in the struggle for existence: this going on through countless ages gives rise to species.

Later writers, Cope, Lamarh, institute consciousness and the use and disuse of parts of the great controlling factors giving environment but a secondary place. Brook gives environment more prominence, attributing to its influence changes in the gemmules constituting the ovum, and according to the theory of Weismann, thus modifying the individual springing from the ovum. What then are we to conclude. It is a big question and I think I cannot do better than quote Professor Mills. "In viewing heredity and modification it is impossible to get a true insight without taking into consideration both original natural tendencies of living matter and the influence of environment, and so far as our experience goes, life is impossible apart from the influence of its surroundings." He concludes that the various authorities are right in concluding that evolution is universal.

Stable equilibrium is an idea incompatible with our fundamental conception of life. Altered function implies altered molecular action, which sometimes leads to appreciable structural change. From our conception of the nature of living matter it naturally follows that variation should be greatest, as has been observed, under the greatest alterations in the surroundings.



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PRESIDENT'S ADDRESS.

BY

H. H. CHOWN, M.D., Winnipeg.

*Delivered before the Canadian Medical Association, Winnipeg,  
August 28, 1901.*

As this is the first time that the Canadian Medical Association has met in Manitoba, I would like briefly to call attention to the future of the province. With less than ten per cent. of the arable land under cultivation, our farmers this year have a crop estimated to yield 85,000,000 bushels of grain. In the Territories west of us, about one-tenth of one per cent. of the available crop area has as yet been touched by the plow. Between the Laurentian hills on the east and the Rocky Mountains on the west and north of the forty-ninth parallel, it is possible to grow the total amount of the wheat now used in the whole world. We want population, and we hope to make each of you a willing immigration agent.

Winnipeg is a growing and vigorous infant, but I must not delay to point out its many interesting features. I have seen it almost from its birth onward, and would probably be paternal in my estimation of its charms. Babies have their moments of repulsiveness, and you will find many things to criticize in this growing city, but I trust you will:—

Be to its faults a little kind,

Be to its failings ever blind.

It is within the scope of an address to a medical association, to refer to the work performed for the purpose of making the city a healthy one. Notwithstanding the level nature of the land, an excellent system of sewers has been introduced through all the streets. Arrangements have been made for regular flushing by means of tilting basins at the upper



end of each sewer. As we have two rivers at our doors, the problem of removing sewage was easily and safely solved.

The water supplied to our people is as pure as can be found in the world. Vienna boasts of having water which contains only 35 colonies of bacteria to each cubic centimeter, and has therefore to all intents and purposes a sterile water. A similar examination of the city supply showed that there were in it only 9 to 30 colonies. The water is taken from an artesian well, 1½ ft. in diameter and 48 ft. deep, and although they have been pumping for months a supply of from 2,000,000 to 3,000,000 gallons per day, there is not the slightest evidence of any diminution of the amount flowing in. The well is supposed to tap an underground passage which runs from Lake Manitoba, and as this lake is 130 miles long, the supply is inexhaustible. The underlying rock formation in this section is a magnesian limestone, and consequently the water contains a large amount of the carbonates of lime and of magnesia, and is too hard for satisfactory use in boilers and hot water appliances. This is overcome by using Clark's method of softening, by precipitation of these carbonates through the action of lime-water; 75 per cent. of the lime and 50 to 60 per cent. of the magnesia, or 68 per cent. of the total hardness is removed. The softening plant is unique on this side the Atlantic, and well deserves study at your hands. The water when taken from the taps in our homes is so cold that it requires no ice, and the danger of importing disease germs in the ice is thus eliminated. The citizens of Winnipeg, both those of to-day and those of the future, will ever owe a debt of gratitude to the engineer, Col. H. N. Ruttan, who discovered the source, inaugurated the system and carried it through to so successful an issue.

During the past year the subject of tuberculosis has held the paramount place in the interest of the profession. Congresses have convened at London, New York and Ottawa for the discussion of this white man's scourge, and for the formulation of means to overcome its sway. As Friday evening will be devoted to the full discussion of the subject, I shall only draw your attention to one point which I believe would well repay thorough investigation. Koch's tentative denial of the oneness of tuberculosis of man and tuberculosis of cattle still needs the proof of non-inoculability from cattle to man. In this new country, where our farmers, young and free from tuberculous taint, live in newly-built houses which harbor no bacilli and are separated by long distances from their neighbours, tuberculosis constantly makes its appearance. We have here unconsciously, but no less disastrously, an experiment on a wide scale. If you can eliminate heredity, house infection, and contagion from other cases, to what cause can you ascribe the origin of

these outbreaks? Add to this that in every case where the farmer's cattle have been tested by tuberculin, some of them have reacted strongly. The juxtaposition may not be proof positive, but its continuous recurrence certainly is suggestive. If our Government would back up financially a careful study of this one point, I believe that information of great value would be obtained. Indeed, without assistance from the ruling authorities, the progress of stamping out this disease will be slow and disappointing. You can get money appropriated to suppress outbreaks of glanders or lumpy-jaw, but when you appeal for aid in lessening the greatest scourge of the human race, you will find that the coffers are always empty.

Medical education continues and will continue to demand great attention at your hands. I commend very strongly to you the plan of Dominion Registration as introduced by Dr. Roddick. Why should each practitioner who desires for any reason to move from one province to another be compelled to pass examinations that will pluck ninety-nine per cent. of the examiners? Why should our respected teachers, who were our fathers in the profession in Canada when we were in swaddling clothes, be made to submit to quizzing at the hands of those whom they instructed? The present system seems to be based on unnecessary self-appreciation on the part of some, and base fear of competition in others. It is not the number of years given to study or the number and variety of lectures attended that make the competent practitioner. As an examiner and as a consultant, I have often found the greatest failures among those who passed through the curricula that are most lauded and most strongly supported. I regret that in the higher standard now demanded for matriculation, no place has been given to logic and metaphysics. Every workman who knows the nature of the tools he uses is more reliable and more proficient than his ignorant neighbour. Surely a clear knowledge of the mind and a thorough study of the laws of reasoning would form an invaluable addition to the equipment of the physician. The present mode of training our students makes keen their powers of observation, but leaves them without any conception of how to join together all the facts that have been noted into an accurate and full diagnosis. Want of clear reasoning is more frequently the cause of mistakes than inability to gather together the symptoms of the case. Then how much more satisfactorily would cases of mental instability be dealt with if the physician understood the functional disturbances to which the mind is liable? Would there be the same field for Christian Science, hypnotism, telepathy, osteopathy, electrical treatment, if we were well posted in the reciprocal influence of mind on matter? The almost universal habit of prescribing drugs for each one applying for

relief from neurotic affections, is the foundation on which is constructed the greater part of quack treatment. An honest acknowledgment of our inability to locate the cause of many pains and a strong demand for further opportunities of observation would ultimately redound to our credit, though for a moment a crude deunuciation might follow us.

It would be the height of presumption for me to describe the status of medicine to-day, but it may be interesting to review the amount of our knowledge a hundred years ago. We all know the commanding sphere occupied by our science and art now, but few have taken the trouble to inquire into the real knowledge possessed by our predecessors at the beginning of the nineteenth century. Bichat, early in the century, announced the difference between pneumonia, pleurisy, and bronchitis. This differentiation was made on constitutional symptoms, as the physical examination of the lungs was unknown. Although percussion was employed over a hundred years ago, mediate auscultation was first introduced by Laennec when one-fifth of the century had passed by. The description given by Watson of tubercle is worth comparing with our present knowledge. "Tubercles," he says, "are composed of unorganized matter, deposited from the blood, of a yellowish colour, opaque and friable and of about the consistence of cheese." This corresponds well with the process of caseation as we know it to-day. He also describes miliary tubercles very clearly. "The lungs are often studded with a number of small granules of firmer consistency, almost as hard as cartilage, and of a bluish-grey colour. Whatever may be the true theory respecting these little grey bodies, it is certain that they acknowledge some intimate connection with the true cheese tubercle." How much clearer is our knowledge of this disease now, and how widened is our conception of the part played by the bacillus tuberculosis.

There was no distinction known between the varied forms of continued fever when the last century began. Typhus and typhoid fever were not distinguished the one from the other. Yellow fever was believed to be due to local insanitary conditions and to be discriminated from other febrile disorders only by its severity and by its limited locality. Rush writes, "To say that a febrile disorder is contagious is the same thing as to say that it is produced by an animal poison. These animal poisons affect changes in the blood whereby they are abundantly multiplied or reproduced. In order that a specific animal poison should affect its own reproduction in the blood, it is requisite that a certain ingredient should be present. If this ingredient is exhausted the same disease cannot be again produced by the agency of that poison." This is really a very clear statement of our doctrine of contagion and immunity, requiring few changes to meet our present day knowledge.



Malarial fever was supposed to be caused by "certain invisible effluvia or emanations from the surface of the earth." They rôle of the festive mosquito in spreading this disease as well as yellow fever was then undreamed of. They did not believe in the contagiousness of phthisis, but explained its prevalence by constitutional predisposition. Diathesis figured largely in their etiology. Watson states that tubercular diseases are liable to occur principally in the phlegmatic with pale complexions, narrow chests, flabby muscles and feeble circulation; in the sanguine with transparent rosy skin, long silky eyelashes, and unusual mental precocity; and in the bilious with dark muddy complexion and mental and bodily sluggishness. Surely under these three heads all of mankind would be included and the value of the explanation rendered useless.

The energetic agent of proprietary drugs was as active then as to-day, and found a too easy and credulous hearer among the doctors. I learn from a presidential address delivered before the Medical Society of the State of New York, that "medicated gout water," the composition of which was unknown, was nevertheless approved by the faculty in London, Paris and New York. How many of us to-day succumb to the temptation of using some much vaunted remedy of which our total knowledge is embraced in the puffing of some verbose commercial traveler? As a proof that there is nothing new under the sun, I may mention that in 1810 the "gold cure" was recommended to the attention of every practitioner. This most valuable discovery was said to cure "syphilis, scrofula and scirrhus uterus" and more still, to have succeeded in nearly every trial. Credulity was rampant then as to-day, and the poor patients were compelled to swallow gallons of chemicals, whose only potency lay in the assured promises of the prescriber. Palatability is much more sought after to-day, and the belief in the efficacy of a mixture as proportionate to its nauseousness has passed away. This is partly due to developments in chemical analysis, for a century ago, they had cinchona bark but not quinine, opium but not morphine, nux vomica but not strychnine. Bleeding was in constant use, and the heroic way in which it was performed must evoke our admiration for the courageousness of both patient and physician. They counted blood not by ounces but by pints. Even after this onslaught upon the life-giving fluid, they did not hesitate to follow on with such doses of purgatives and emetics as would cause the ruin of professional standing in anyone who ventured on such medication to-day. I can only explain the recovery of their patients by the surmise that they became so limp and helpless that the fair and honourable disease germ retired from the contest rather than gain a victory over so poor an antagonist.



In surgery greater progress has been made than in any other department of our art and science. Wounds in 1800 were supposed to require inflammation to produce union. *Pus bonum et laudabile* accompanied benign forms of inflammation and indicated that all was going regularly. As they had no anæsthetics, they resorted to the use of infusions of tobacco taken internally to place their patients in the condition of the sea-sick passenger, who is so prostrate that he cares not what operation is performed so long as the end comes quickly. Too surely indeed did death follow the use of the knife, for those who survived the shock had to run the gauntlet of that list of wound infections which has now been almost banished by antiseptics. The appreciation of surgical cleanliness, as taught by Lord Lister and his followers, has enabled the surgeon to widen the field of his labours so that scarcely any part of the human body has, during the past twenty years, escaped the use of the knife. I have not heard of anyone removing the pineal gland, and possibly this holds the proud position of being the only unassailable organ. But I warn it not to be too elated or some surgeon will snatch world-wide fame by removing it. The safety with which major operations can be performed, the slight amount of pain which follows, and the rapidity with which the wounds heal, make the practice of this branch of medicine an attractive and alluring occupation. It is unnecessary for me to enter into a detailed account of the newer operations now performed, the change has been too recent and too striking to have escaped the notice of every practitioner.

Anæsthetics and antiseptics have played a benevolent rôle, not only in surgery, but also in obstetrics. The expectant mother can await her approaching confinement without dread of agonizing pain, as the modern accoucheur will control with chloroform the most violent suffering. Puerperal fever has been largely suppressed by our recently acquired knowledge of its causes and the application of the necessary means of prevention. Deaths from the sequelæ of childbirth have been greatly reduced during the last quarter of a century.

What has the future in store for us? I will not attempt to prophesy, as my qualifications are not well attested. We all know that there are large questions yet to be settled, and therefore the need for patient and persevering investigation is still paramount. Bacteriology and hæmatology are in their infancy, but have been so illuminating in their short development that we expect a flood of light yet to come from these sources. No one can sit down complacently and feel that the summit has been reached; rather should each of us resolve to work more faithfully in order in even a humble capacity to add to the sum of knowledge in our chosen profession. Cannot some one grasp the kernel of

truth that underlies the fallacies of Christian Science, Dowieism, Faith-healing, *et hoc genus omne*? Are we not too prone to rely on drugs and to forget the control of mind over body? If many of the ailments brought to our notice are imaginary, why not treat them through the source of imagination rather than through the stomach? I feel that a duty rests upon us to get at the true cause of all forms of disease, and rescue the public from the deceived fanatic and the ignorant pretender by doing not only all that these claim, but doing more and doing it better.

Let me conclude this address by quoting a layman's opinion of what a physician should be and do. The standard is a high one, and if we can measurably achieve success in the direction pointed out, we will do much to gain and hold the confidence of the public as the only true guides in matters of health and sickness.

The Rev. J. M. Buckley, of New York, says:—

“An intelligent, educated, experienced and candid physician studies both the mind and body, relieves the sick man of the responsibility of treating himself, strengthens him by hope and encourages him by his personal presence and manner. He understands the mineral, plant and animal substances included in the *materia medica*, he knows that not medicines, but inherited vital force, is the primary cause of health and healing of the repair of injuries. He knows also by observation and experiment that nature can be assisted, but he interferes only when it is safe and necessary. Such a physician is too learned and too honest ever to do he knows not what, because he knows not what to do. He can relieve the pains of incurable diseases, smooth the pathway of sufferers to the inevitable end, and to convalescents he can give such hygienic hints as may prevent the recurrence of the malady or save them from something worse. Certain that all men must die and that all die of old age, disease, accident, or intentional violence, he claims by hygiene, medicine, and surgery to assist nature, to delay the inevitable, and to render the journey to it more endurable.”

## THE ADDRESS IN MEDICINE.

BY

J. R. JONES, M.D., Winnipeg.

*Delivered before the Canadian Medical Association, Winnipeg,*

*August 28, 1901.*

Mr. President and Members of the Canadian Medical Association. When the President of this Association deputed to me the honor of delivering the Address in Medicine I had no little anxiety in the selection of a theme worthy of the occasion and which would command the interest of the Members. This difficulty was accentuated by the fact that I had never attended any meeting of the Canadian Medical Association, and I had no knowledge of the addresses of my predecessors. However, at this particular juncture in the history of our profession in the Dominion of Canada, I have concluded it would be wise, and I hope profitable to address you upon the unsolved problem of medical education. Its importance is especially manifest when we assume the possibility of the establishment of a Dominion Medical Board. It is necessary, therefore, for the various bodies engaged in teaching or in registration of qualifications to make ample provision and preparation for this long-looked-for event. Uniform or equivalent curricula will greatly facilitate paving the way for the accomplishment of Dominion registration in Canada. There are as many standards of medical education as there are political subdivisions.

The great aim of the medical profession, chiefly through the potent influence of this association, is to create on a sound and enduring basis a Dominion Medical Board whose qualification can be registered in every Province of the Dominion. Nor should we rest here; its qualification should not only be Canadian but Imperial, capable of registration in Great and Greater Britain.

### PRELIMINARY EDUCATION.

In Dr. Roddick's Bill provision is made for the proposed Board to conduct the medical entrance examination by examiners appointed by the Dominion Council. It is desirable that examination in general education be left to the universities and such other institutions engaged in general education and examination as may from time to time be approved by the Board. Let the Council select or erect the standard of medical matriculation, and then accept educational certificates of equi-

valent or higher value, for registration as a medical student. This is the practice followed in England by all bodies granting qualifications except the universities.

For our students' matriculation we should fall back on our national educational bodies whose examination should reach a specific uniform or equivalent standard. We can safely entrust this department to our educational institutions which will receive the recognition and endorsement of the Dominion Medical Board. By accepting approved certificates the Dominion Medical Board is not only relieved of responsibility and expense, but more students will avail themselves of Dominion registration than if they are compelled to prepare on a range of subjects out of harmony with the curriculum of the institution in which they are receiving their education. Every university in the Dominion of Canada will receive equivalent certificates from sister institutions; and these universities also will receive partial certificates, granting for example "pro tanto," standing to school teachers holding first and second class certificates. These certificates are accepted by the university in all branches—law, medicine and arts.

Medical examiners in England as well as in Canada are fully convinced that there is some defect in the preliminary education of medical students. The standard is not high enough. Many students pass into the medical colleges utterly unprepared to profit by the education of their medical teachers, their minds not being disciplined that they might be competent to engage in the difficult studies of the profession with advantage.

The question naturally arises: What should be the range of the medical matriculation examination? Should Latin be eliminated and modern languages be substituted? Should an elementary knowledge of chemistry, physiology and comparative anatomy be demanded? I think there should be no special preparation for the study of medicine; that it should be that preparation common to all educated professions. Notwithstanding the advocacy of the elimination of Latin in medical entrance examination by such eminent men as Huxley, Sir Willoughby Wade, Jonathan Hutchinson, Herbert Spencer and Sir John Williams, the weight of argument to my mind is in favor of its retention. I would even go a step farther and advocate the inclusion of Greek.

The justification of the advocacy of Greek lies in the cardinal circumstance that it is *par excellence* the language of science. A very large proportion of technical terms, compound scientific words, and descriptive names used in anatomy and physiology, medicine, and surgery are derived from the Greek. Almost the whole of scientific and medical nomenclature is derived from Latin and Greek, especially the latter.



Permit me to quote two eminent authorities who favor the retaining of classical education as training for professional studies. Dr. Alexander Hill, a member of our own profession who is master of Downing College, Cambridge, says "How to make a competent biologist; how to obtain that proper balance between the development of observation, the cultivation of the memory and the attainment of the ability to correlate and compare observations; to draw inferences, and to base hypotheses. An early training in science is the surest guarantee of eventual proficiency." To this my experience gives an emphatic denial. Science scholars often cause their tutors the greatest disappointment. Their appearance in the examination before they are nineteen years of age—the limit for the entrance scholarship—means too often that they are the boys who at the earliest possible age have deserted, what we may call, the proper work of the school for the sake of preparing for the science scholarship. They are not "lads of parts," but boys who have been crammed with scientific facts by clever teachers and taught how to show them off in the most impressive way. Their knowledge is often extraordinarily accurate and extensive. They have a magnificent test-tube acquaintance with chemistry, they have thoroughly mastered the elementary formulæ of physics; they have acquired the elements of botany and zoology—but they have no mental training. Let them work never so hard during their three years' course at Cambridge, they are quickly overhauled by the youngest boys from the big public schools, who, when they came up, did not know the test-tube from a barometer. The science scholar as turned out by schools "with a successful modern side" is a prodigy of information and difficult to beat on the earlier levels of his subject; but as soon as he reaches that region of information where solid facts are left behind, a region in which is needed a nice appreciation of the relative cogency of arguments, the close following of a train of inferences, he is like a clod-hopper on a glacier without feet to grip or a heart to dare."

This, gentlemen, is the result of the experience of the Master of Downing.

My second authority is Professor Jebb of Berlin who summarises under the five following headings the advantages of classical education.

1. Ignorance of Latin and Greek is a positive obstruction to the pursuit of many branches of study.

2. Ideality of the scientific sense is cultivated by studies which have not an immediate bearing upon daily life.

3. An actual knowledge for its own sake is promoted by them.

4. The power of thinking receives a varied general exercise in these studies.

5. They are of historical value as illustrating the foundations on which so much of modern thought and life has been built."

This subject was discussed in the German Federal Council last year and at the conclusion a resolution was passed affirming that the certificates of a classical education should alone give the right of admission to the medical examinations. A few years ago Berlin University expressed a very decided opinion upon the question and furnished a series of reasons for maintaining classical studies as a basis of professional education. The utilitarian educationalist, who, vandal-like, would exclude classics from the preliminary examination, desires instead a knowledge of science, physiology, anatomy, biology, etc., thus partially relieving the medical curriculum and affording a partial preparation for the professional course.

Others, Professor Schæffer for example, more wisely recommend a year's course in science sandwiched between the passing of the preliminary examination and the student's entrance at a medical college. This is an ideal plan, but is scarcely practicable in Canada. I consider it a great mistake to cram in small elementary scraps of scientific information designated as "science" in the schoolboys' curriculum. Science should not be taught until a sufficient knowledge is acquired of the ordinary subjects of general education; hence it cannot be taken up till the final period of school life. The meagre scientific equipment of our schools and the unfitness of our teachers would render the teaching of science very elementary and most confusing.

Scientific knowledge and education thus produced would be of no appreciable practical value in a medical career. In regard to the subjects embraced in the medical matriculation, the most lamentable defect is in the English paper. This is the most neglected subject in our primary schools. The same defect exists in England. At a recent teachers' examination in England, the majority of those rejected came to grief over the English paper—a composition on the prosaic subject of tramways. The teachers were in revolt and demanded a revision of their papers which confirmed the examiners' verdict.

The majority of rejections at the Conjoint Board in England were attributable to the results of a defective knowledge of English.

Having acted for many years as an examiner at our University, I have concluded that the teaching of English takes a very subordinate position in our schools. Spelling and composition prove that English takes a third or fourth position. Students from all parts of the Dominion present themselves at our University examination, and the same defect exists among the students from other Provinces of the Dominion. It is obvious that English ought to be a prominent subject of the me-

dical matriculation examination. Every student should be able to express his thoughts coherently and intelligently.

In this country of magnificent distances I suppose it is impossible to have a Medical Teacher's Association. Certainly such a competent body could deal with the revision of the medical curriculum as well as define the limits of the medical entrance examination. This important subject could not be delegated to this association which meets once a year for a few days at various points of the Dominion and mainly for the purposes of social recreation. Persistent, consecutive and complete work can never be accomplished by a committee of the Canadian Medical Association. It is rare for the members of any given committee to be in attendance at more than two consecutive meetings.

#### PROFESSIONAL EDUCATION.

The medical curriculum has subjects difficult to acquire, worthless as mental gymnastics, useless in practice, and speedily forgotten when acquired. The methods of teaching are imperfect and vicious. The student in didactic lectures is not taught—he is over-lectured and undertaught. The lecturer describes rather than demonstrates, and instead of making the student follow him step by step in his methods of observation, collecting, comparing, testing, and recording facts and of reasoning thereon, the didactic lecturer leaves them to be learned by being described, forgetful that they can be learned only by being practiced.

The main tendency of the present method of didactic lectures is to give students smatterings of scientific knowledge at the cost of that thorough knowledge of their art which is essential to its successful exercise. In the curriculum there is overlapping of similar subjects in the didactic and clinical courses. The course of didactic lectures should be entirely abolished or radically modified. Teaching should be bedside work—oral and written examinations with comments by the teacher. In analysing the didactic course, I would like to direct the attention of the Association to several defects and useless wastes of time which could be more profitably employed.

What earthly use is there for a didactic lecture on descriptive anatomy, a subject which can only be mastered in the dissecting room. Professor McAllister of Cambridge states "that anatomy being a practical subject can be learned only in the dissecting room." The line of demarcation between descriptive and practical anatomy is arbitrary and fanciful. In a large class in descriptive anatomy, the favored few near the lecturer and the dissected part derive some instruction, but to all the rest the hour is useless and wasted. Persistent work in the dis-



sectioning room under the guidance of an experienced demonstrator, who will describe, discuss and constantly orally examine the student, is a rational and effective method of teaching anatomy.

Another useless subject is medical jurisprudence; the interest in it ends after the examination, and to the general practitioner the knowledge thus gained is of no practical value. Few men are called upon to give evidence in criminal cases, and when we do, the knowledge acquired while at College is either useless, fragmentary or forgotten; and in order to cut a respectable figure in Court, we frantically read up Taylor and Reese. All knowledge is useful, but that derived from medical jurisprudence is about as practical to the general practitioner as the geography of Timbuctoo or the philosophy of Confusius.

The object of medical teaching is to turn out good practitioners.

Another subject as at present taught which is a weariness to the flesh is Sanitary Science. Its pretensions are stupendous; it is supposed to teach everything—land surveying, architecture, organic chemistry, agriculture, plumbing, drainage and civil engineering. The student is crammed with this conglomerate stuff which he must intelligently reproduce at the annual examination. In Sanitary science we have a splendid exemplification of the “cram” system and the utter uselessness of the knowledge, the very essence of smattering.

In order to show the uselessness of the hard work expended in Sanitary Science, I will quote a few questions from the examination papers on this subject:

1. What do you understand by the expressions “effective population,” “dependent population” and “density of population.”
2. Define the word “nuisance” according to law. Show the statutory provisions under which “nuisance” may be dealt with.
3. What impurities of a deleterious character may be found in bread.
4. In the event of typhoid fever occurring in a family what steps should be taken to ascertain that the water supply and sanitary fittings are in proper order? I will answer this question for the benefit of the Association:—“Send for the plumber.”

The questions I have quoted are well enough for the candidate for the Science degree, but of no use to the general practitioner.

The burden of the medical student of to-day is very great. More attendance at lectures is demanded; more subjects are being wedged into the curriculum. That conglomerate heap labelled “Materia Medica” might be treated in a bag and baggage fashion. It is impossible to encompass the large mass of dry technical knowledge in the students’ course. Materia Medica is a mere tax to the memory; the acquisition largely of bare facts being necessary, and facts that are neither retained



nor applied. Mr. Huxley's views in an address to the students of St. Mary's Hospital are appropriate. He says, "I am quite prepared to admit, and, indeed, I have always had a strong conviction, that there is something absolutely preposterous in the volume and bulk to which some of our treatises on *materia medica* extend, and the enormous quantity of irrelevant matter with which their pages are crammed." What scraps of information can a didactic lecturer impart to his students which they cannot readily find in the text-book? An occasional quiz class with specimens of drug and their preparation should take the place of the systematic lecture, in fact, let pharmacy and therapeutics takes its elbow out of place.

The careful perusal of the *materia medica* examination paper convinces one that in this subject there is a great deal of misdirected energy in the acquisition of evanescent knowledge, because it is mere verbal memorising. Let me give a few examples culled from English sources. I would not cull examples from Canadian examinations for reasons that are very obvious.

1. Name the pharmacopœial preparations into which potassii tartras acidi enters, and give doses. Describe the action of this drug.

2. What is lini farina; give its source and enumerate all the preparations into which it enters.

3. Contrast the physical and chemical properties of castor oil and oil of turpentine.

Apropos of these very questions, Mr. T. Prigden Teale says, "This is the kind of rubbish that the elaborate and costly machinery of a public examination has to waste its energies on." Thus, I would say, is the stuff doled out by your didactic lecturer on *materia medica* and which demands the bodily attendance of our students for the prescribed course.

My sympathy goes out to the overburdened medical student weighed down by an accumulation of courses and annual examinations. His corporeal presence is required at so many lectures, that he has little time, inclination and energy for hospital work, recreation and private reading.

Sir William Stokes truly says:—"I have satisfied myself over and over again that the failure of a large proportion of candidates to answer up to the required standard was due, not to the want of diligent or conscientious work on their part, but simply to brain exhaustion from an attempt to overload it with facts which were believed to be essential."

The system of imparting instruction by lectures is a mediæval custom originating when text books were few, costly and inaccurate. It is a purely traditional system. Now that there are text books in abundance covering the whole range, and of excellent merit, these lectures should be modified. The chief value of lectures is, that the student is obliged

to hear a certain quantity of a subject every day whether he likes it or not, whilst no authority can compel him to work at a text book except by moral suasion or arguments of a practical character addressed to his self-interest. A restricted number of lectures may be advisable, but the number could be abbreviated with advantage, and confined to the inculcation of principles removing difficulties and obstacles from the student's path, explaining types and divergencies of disease, giving information not within the pages of a text-book. The time hitherto employed in systematic lectures might be devoted to class examination on previously announced subjects in which the teacher should indulge in questions, explanations, corrections and comments. This is the true education—the drawing out instead of the pouring in process.

The lecture system reminds one of the daughters of Danaus, whose destiny was to fill pitchers which could hold no water; the students are percolated receptacles, transitory knowledge.

Mr. Dennis Hovell, in his address to the Hunterian Society, very truly says:—"Education is a subject much misinterpreted in word and abused in deed. It is intended literally to mean a drawing out of the faculties, and by being altered into mere pouring in and puffing up it has often resulted in checking and repressing some of the most valuable of them. Its highly necessary adjuvants, discipline and training, are not only too often but too entirely neglected, and the want of these is much felt because it operates negatively by preventing and neutralizing the good effects of teaching." We might with profit emulate our brethren in the United States in our methods of teaching. In that country there is an approach to the tutorial system. Students in the various subjects are divided into small sub-classes, each presided over by a lecturer; each student receives individual attention in the small group or section instruction. It is simply a means of enabling the individual to see, hear and touch for himself under the best possible scientific guidance. His weakness is discovered; his knowledge tested; his observation is stimulated and cultivated; his attention riveted; his application of the laws of thought employed and rightly prosecuted. It is the inductive method applied to medicine.

The "case" method advocated by Mr. Cannon, of Harvard University, in March, 1900, has received the endorsement of many teachers in England and the United States. This method is supposed to supplant the dreary, old-fashioned, didactic lecture, and is an imitation of the plan adopted in the Law Department of Harvard. The plan is to secure printed histories of actual cases, which, perhaps, the student may have seen in the hospital. Each student is provisionally supplied with a printed copy of the history for careful perusal sometime prior

to the discussion. The class and teacher meet and discuss the diagnosis, pathology, symptoms and treatment. Text-books and other literature are consulted, and the case is thoroughly threshed out. The student is learning the judgment of clinical data, the estimation and relative value of the various symptoms, distinguishing between the important and the unimportant, the common features and the more unique. He not only receives but acquires knowledge. The Case method may supplant or supplement the didactic and clinical courses. This plan is no experiment, for it has been on successful trial by several professors at Harvard, by Dr. J. White of Philadelphia and Dr. R. E. Riggs of the University of Minnesota. Possibly I may be prejudiced, but, from personal experience, I favor the English system of clinical clerkships and dresserships as the most feasible, practical and thorough for the development of medical teaching. It embraces all the advantages claimed by the advocates of the Case system and the sectional plan. Moreover, the student is brought into direct contact with the patient for whose history he is responsible. By this method the medical student is trained to habits of minute, careful methodised observation and registration of the phenomena of disease. The student observes his cases from the incipient stage to either recovery or the post-mortem room, to the verification or otherwise of his daily recorded observations. Upon this solid foundation of actual personal experience, he builds to fit himself for life's battle.

#### DOMINION REGISTRATION.

The educational requirements of the proposed Dominion Board will completely determine the nature of the instruction imparted to all students at the medical colleges. If this Board is successful in securing even a modest number of candidates for its qualification, then the mandate of the Board will regulate the whole machinery of medical education, preliminary and professional, and the influence of this body will have far-reaching effects upon the profession in this country. The various medical colleges will be compelled eventually to conform to its regulations, just as is the case between the teaching bodies and the general medical council of Great Britain, and, although not endowed with the supreme prerogative of the Medical Council of Great Britain, its enactments, regulations and requirements will practically have the same beneficial effects. Granting Dr. Roddick's scheme is launched, after some years there will be conflict and confusion between the requirements and curricula of the Dominion Board and those of the licensing bodies of the various provinces of the Dominion, and these opposing requirements will tax the resources of the medical col-



leges to meet the necessities of the two classes of students—those desiring the provincial qualification and the others desiring the national one. Hence it is necessary that all medical colleges should have the same curriculum. The course should be identical but the method of instruction should be left to the wisdom of each.

The alternative requirements suggested for the Dominion qualification may be summarised under the following headings:

1. The candidate must secure provincial registration before presenting himself for the Dominion license, and the Dominion Council would examine him in the intermediate and final subjects, the final examination to be passed five years subsequent to medical matriculation.

2. The second alternative is that the candidate must pass the Dominion Medical Board in all the subjects of the professional course, the primary and intermediate subjects to be taken under the supervision of the Dominion Medical Board at the various centres in which medical colleges are located.

In order that the license of the Dominion Medical Board should obtain a predominant position, I think it should demand examination in all subjects of the professional course. This hybrid examination, part by the Provincial licensing body, and part by the Dominion Medical Board, might prevent us securing reciprocal arrangements with the Medical Council of Great Britain. This proposed joint scheme of examination might frustrate one of the great objects of Dr. Roddick's Bill—registration in Great Britain.

Passing from the purely educational aspects of the question to the practical one, namely—the establishment of a Dominion Medical Board, the subject bristles with many difficulties, legal, financial and representative. The general Government of Canada cannot deprive the provinces of their vested constitutional privileges, nor can the Provincial legislatures unite and create the Dominion Medical Board. We are, therefore, on the horns of a legal dilemma, and in order to extricate ourselves, are forced to resort to the most extraordinary round-about legislation. It is alleged that under Section 91 of the British North American Act the Dominion Parliament has power to "make laws for the best order and good government of Canada in relation to all matters not coming within the classes of subjects by this Act assigned exclusively to the legislatures of the Province." Under this cause it is proposed to create a Dominion Medical Board and such legislation is alleged to be constitutional, possessing all the elements of permanence, but two essential pre-requisites are necessary before the bill can become law and become operative. One is to secure the consent of the provincial licensing bodies, and the other is



to secure such local legislation as will enable the local councils to legally register the Dominion qualification. Now, let us suppose that the consent of these bodies has been secured and the necessary local legislation obtained. The possessor of the Dominion qualification must register before the local Council of the Province, paying the usual fee were the parties to practice. Should he desire at any future time to locate in another province, registration must again take place. In other words, his Dominion qualification entitles him to inter-professional endorsement.

This complex, elaborate structure of Dominion registration may fall to pieces at any moment when any of the contracting provinces wishes to secede from the bargain. A province with grievances—real or imaginary—by its withdrawal in a moment of petulant irritability may shatter the Dominion Medical Board and cause its complete disintegration. This is one of the weak points of Dr. Roddick's Bill.

Manitoba and Quebec had reciprocal registration, when Quebec, without a single day's notice, withdrew and reciprocity ended. Dr. Roddick states that this weak point can be safeguarded by making secession difficult, intricate and expensive, by forcing the aggrieved province to appeal to the Supreme Court of Canada, or to a court of arbitration, the members of which will be selected by the Dominion Council or defined by statute.

#### REPRESENTATION ON THE COUNCIL.

Adequate representation of the general profession in the various provinces of the medical colleges and of the universities implies a large, extensive and unwieldy council; still all these elements should be represented. Under section 6, sub-section 21, Dr. Roddick's Bill reads "The Council is to be composed of three members from Each Province—Ontario 3, Quebec 3, Nova Scotia 3, Manitoba 3, New Brunswick 3, British Columbia 3, Northwest Territories 3, Prince Edward Island 3, Homeopaths 3, total 27. If provincial representation be according to population, then this large number is further augmented. Let me here cull an extract from a circular letter addressed to our registrar—Dr. Gray—by Dr. Roddick. Dr. Roddick says by way of suggestion, "The President of each council shall be *ex-officio* a member. The Governor-General-in-Council shall appoint one for each province and the Territories, then the first 100 or fraction of 100 medical practitioners in each province shall be entitled to one representative, that the second 100 or fraction thereof over 50 per cent. shall be entitled to one representative, and for every 600 over that, one representative shall be allowed. This

will give you four representatives in the Council for Manitoba. If university representation on the council be added, and also a representative of the medical colleges, the whole number of members would be at least 48. The General Council of Great Britain and Ireland consisted of 24 persons for many years. At the present date there are 30, the increase being caused by the representation of the general profession. In the Council of Ontario there are 30 members.

There are two serious objections to Dr. Roddick's Bill.

1. The great number of the representatives of the council entailing expense beyond, at least, our immediate resources.

2. The fact that one of the contracting parties to Dominion registration may secede and the elaborate fabric, the work of many years, tumble to the ground. This is the most serious and fundamental defect. Will an expensive legal procedure prevent secession and disintegration? When these problems have been solved, then, and not till then, is medical registration in sight.

## THE ADDRESS IN SURGERY.

BY

O. M. JONES, M.D., F.R.C.S., Victoria, B.C.

*Delivered before the Canadian Medical Association, Winnipeg,  
August 29, 1901.*

*Mr. President and Gentlemen,—*

My first duty is to express my appreciation of the honour which you have conferred upon me in selecting me to deliver the "Address on Surgery."

Having undertaken to give this address, I must ask you to forgive me for failing to bring before you anything original. The inhabitants of Western Canada are not afflicted with surgical diseases differing from those in Eastern Canada. There may be this difference—that they are more impatient than the Eastern people when they are afflicted with any disease. They always expect and desire to be treated by the most radical methods—however severe they may be. They have no time for palliative treatment. They become reckless and wish to be relieved of their suffering rapidly. It may be that the life they lead in the mountains, full of hardships and dangers, tends to dispel all fear of death. It has often astonished me to see how little perturbed some of these people are when they are told that they suffer from dangerous conditions, such as cancer of the rectum, tongue, or stomach, which necessitate a severe surgical operation. Without a murmur they consent to anything you suggest. They go to the hospital then and there and face their operation as if it were an ordinary everyday occurrence.

As an example of the strange ideas that the public have on this subject, I might quote the following letter, which is a fact:

"Dear Sir,—I hear that Mr. Briggs, one of my lodgers, is to be operated upon on Wednesday, and I shall be much obliged if you will postpone the operation until Friday, as my daughter is to be married on Thursday, and we do not want the corpse home until after the wedding."

This fearlessness is often coupled with an ignorance that demands surgical treatment where only medical is justifiable. The treatment is too slow to bring about the desired results, and they frequently ask: "Don't you think an operation will cure me?"

Operative surgery has increased to an enormous extent during the

past few years. The wonderful results which have been achieved since the introduction of aseptic surgery, the improved diagnosis of the early stage of cancer in all parts of the body, the absolute safety with which operations are undertaken for the relief of deformity and disease, have given the public every confidence in surgical treatment.

One of the most useful of the recent advances as a means of diagnosis is the X-ray photography. When first introduced, its use was limited to the finding of bullets, needles and pieces of metal embedded in the body; also to the direction and condition of all varieties of fracture and to the localization of calculi in the kidney and bladder. Its uses are now further increased. It is employed for the detection of tubercular deposits in the lungs, and plural effusions can be distinctly seen with the displaced heart pulsating.

Improved methods of applying this photography have rendered its use so simple that in some hospitals nearly all fractures are looked at both before and after they are put in position.

This is done by placing the patient on an ordinary canvas stretcher, the Crooke's tube is placed under the body, and a picture of the bones is thrown on a ground glass screen held over the patient's affected limb. In many cases this has saved the patient much suffering and valuable time. When the soft parts are interposed between the ends of the bone, or in a riding fracture, the fractures have been cut down upon, the muscles or loose fragment removed, and the bones brought into direct apposition.

Another advance, in the same direction, is Finsen's Phototherapy—the method of treating local superficial skin diseases of bacterial origin by the concentrated chemic rays. It is the blue, violet, and ultra-violet rays of the spectrum that possess the most powerful action. This apparatus—which up to the present time is very costly—is installed at a few of the London Hospitals, and the results in the treatment of lupus vulgaris and lupus erythematosus are said to be most satisfactory, as the scar remaining is soft, white, and healthy-looking.

The toxine treatment of disease has also aided us in surgery. What a difference there is to-day in the results from tracheotomy in laryngeal diphtheria when combined with the use of antidiphtheritic serum! In my student days at the hospital it was considered a good record for a house surgeon—who was allowed the privilege of performing tracheotomies when required—if he saved two out of ten cases. But in these days it is not uncommon to hear of six or seven successful cases in succession. A point upon which I lay stress is to perform the operation without administering an anæsthetic. How often have we witnessed the little patient stop breathing before the operation was commenced!



Consequently, I have often thought that many of these died from depressing effects of the anæsthetic upon a patient already saturated with the poison of diphtheria.

I wish to refer to the use of the antistreptococcus serum in the treatment of streptococcus infection of wounds. Although its general use has been adversely reported upon, it does produce a marked beneficial effect upon certain cases.

Only very recently I was called in consultation to see a severe case of septic infection from a scratch over the knuckle of right hand of a patient who had been attending to his child's ear with otorrhœa, and by some means had inoculated his hand. He had been ill four days before I saw him. I found him with his hand in a hot bi-chloride bath, the wound having previously been laid freely open. The temperature ranged between  $104^{\circ}$  and  $105.3-5^{\circ}$  for three days. The lymphatics on the inner side of the arm were marked out by red lines, and in three or four places along their course there were black, sloughy-looking patches. The arm was œdematous up over the shoulder, but there was no sign of deep-seated suppuration. The finger-joints, wrist and elbow could be flexed without pain.

The question of amputation was discussed but decided against. Quinine and stimulants were freely given, and we decided to try the antistreptococcus serum. It was injected over the shoulder night and morning, and the first dose seemed to benefit him; but it was not until he had received four doses that his temperature dropped, the swelling and inflammation began to subside, and the other symptoms to improve. From this time forth there was no rise of temperature, and with the exception of opening two small collections of pus in the course of the lymphatics he rapidly recovered.

Its use in some septic puerperal cases has also been attended with very good results. Its administration in mixed infections has been proved to be useless. When first introduced, we had greater hope of its possibilities, for we supposed it would be useful in cases of septic traumatic arthritis and other forms of suppuration.

Surgery, from the general practitioner's point of view, is becoming so vast a subject that it almost reaches beyond the ability of one man to follow up its advancing steps. Cases of cerebral tumour and abscess are operated upon with success. Certain forms of cerebral hæmorrhage are now being treated by surgical means, but so far with a very limited amount of success. The technique in operations upon the mastoid has been improved upon of late, for the mastoid cells and antrum are opened along the roof of the auditory canal into the middle meatus, and the diseased bone and ossicles removed if necessary. I recollect many

troublesome cases of recurring mastoid suppuration that could have been treated once and for all by the present operations. (Stacke and Schwartz).

The removal of large goitres and tumours of the neck can now be safely undertaken, even if the growths involve the internal jugular vein and common carotid artery on one side, as portions of these vessels are removed with the growth, without any ill-effects resulting.

The more radical and extensive operations in the cases of cancer of the breast have resulted in greatly improved statistics. As an illustration of the necessity of these measures, a few years ago I had under my care a case of schirrus of the breast. It was just a small nodule about the size of a hazel-nut, embedded in the breast on the inner side of the nipple. I cut into it and found it to be cancer. I then removed the whole breast and proceeded to clean out the axilla. There I found a chain of cancerous glands running up under the pectoral muscles towards the clavicle. This was a most deceptive case, because the local lesion was so small that one would have been tempted to just remove the nodule out of the breast, whereas the radical operation was really the only proper treatment.

Wounds of the heart have been sewn up; tubercular cavities and abscess of the lung opened and drained successfully. But of the various branches of surgery, none perhaps to-day excites as much interest as abdominal surgery, and more particularly the diseases of the stomach. By its means, many diseased conditions that were considered hopeless can now be cured or benefited. Every part of the alimentary canal, from the cesophagus to the anus, with the exception of the duodenum, can be removed. Dr. Keen, in speaking of complete gastrectomy, says:

“In the hands of surgeons of exceptional skill and wide experience in abdominal surgery, the operation will be advisable in rare and favourable cases. At all events, it is of great interest to know that physiologically the stomach, as I may say is the case with almost all of our internal organs, is a luxury rather than a necessity.”

My aim is in this address not to discuss the merits nor to give an historical account of these operations—which have been so ably given by Dr. Keen in his Cartwright Lectures, and by others—but to submit to you the deductions which I have been able to arrive at from my own experience in 28 cases.

Much has been written of late upon the subject both in Europe and America. Mayo Robson, Bennett, Moynihan, and Barker, in England; Keen, Hemmeter, Curtis, Kammerer, and others in America; and it was also thoroughly discussed at the American Surgical Association in May, 1900.

In the early days of all new operations, the rate of mortality is generally very great, but this gradually diminishes as we learn the errors that we have fallen into—which in many cases could have been avoided had we been less timid in handling the particular organ. This I have especially seen in dealing with the stomach. Operators have completed what they thought should be done without thoroughly satisfying themselves as to the exact condition of the organ. Fatal results are sure to follow in cases of hour glass contraction of the stomach, or perforating ulcers.

My first operation upon the stomach was in 1893, upon a case of pyloric obstruction. It was a most suitable case for operation. The patient was a wiry little woman of 60, with well-marked symptoms and a moveable tumour felt a little above and to the right of the umbilicus. Senn's plates were used and an anterior gastro-enterostomy performed. After tying the silk sutures, I introduced a row of Lembert sutures with catgut around the junction. She suffered very much from vomiting after the operation, and quite suddenly on the third day she was seized with a violent pain in the epigastrium, and died a few hours later. The result was not encouraging. I was unable to procure a post-mortem, and I attributed the failure of the operation to the use of catgut instead of silk ligatures, as I suppose they gave way or were absorbed too readily for the adhesions to have properly formed.

In December, 1892, Dr. Murphy invented his button. It was not brought prominently before the profession in England till 1895. This ingenious device certainly afforded a rapid means of performing an anastomosis, which formerly in inexperienced hands took an unduly long time to perform. The many uses to which it could be applied appeared to make gastric and intestinal surgery simple. The time occupied in performing an anastomosis by the older methods was often considerable, and added greatly to the shock that followed the necessary handling in operations upon the stomach. Unless the surgeon was unusually dexterous, his patient died before or soon after the operation was completed.

As a student up to 1889, I witnessed several operations upon the intestines, such as re-section, performed by experienced, dexterous and well-known surgeons; but seldom did a case recover from the operation. The only operation I recollect performed for pylorotomy was done in 1883: that was a year or two after Billroth's successful case. Although the operation was skilfully done, the patient died of shock some hours later. For the remainder of my time at the hospital, up to 1889, I do not recollect hearing of or seeing a similar operation performed.

The introduction of Senn's bone plates and the Murphy button gave a great impetus to gastric and intestinal surgery. Between 1875, when

Langenbeck successfully performed re-section of the intestine, and 1890, when Senn introduced his decalcified bone plates, operations upon the intestines were rare. Since that date, the number has multiplied a hundredfold.

The cases I have been able to collect from my notes include examples of nearly all of the diseases of the stomach amenable to surgical treatment:

*List of cases:—*

Gastrostomy.—All for relief of malignant disease of the œsophagus: five cases.

Gastrostomy.—For exploration of the stomach when no positive diagnosis could be made and prolonged treatment had failed to afford relief: four cases.

Gastro-enterostomy.—For pyloric cancer, malignant ulceration of pylorus, gastric ulcer, and for extreme gastric dilatation: thirteen cases.

Pylorotomy.—For pyloric cancer: three cases.

Gastro-plication.—For dilatation of stomach and hyper-chlorhydria: one case.

Gastrolysis.—For adhesion around pylorus: one case.

Perforating gastric ulcer.—Hour glass contraction: one case.

Perforating duodenal ulcer.—One case.

I have included the latter in my list from its close proximity and from the similarity of its symptoms to acute perforating gastric ulcer.

*Preparations for operation.*—In all cases the usual aseptic precautions are carried out; the skin shaved, scrubbed, and antiseptic compresses applied for 12 hours, if the nature of the case permit.

If the conditions are favourable and the patient not too feeble, a purgative is given to clear out the intestinal tract the night previous to the operation; while, if the patient is emaciated and weak, he is fed by nutritive enemata, as well as by the mouth, for 48 hours previous to the operation. The stomach is washed out two hours before anæsthetization. About one hour before the operation, 1-30th gr. strychnine is given, and half an hour later 1-6th gr. codeia, as this diminishes the amount of anæsthetic required to produce narcosis.

*Gastrostomy.*—In all five cases, the operation was performed for cancer of the œsophagus. Witzel's operation was performed in four of the cases with very excellent results.

The Ssabenejew-Frank's operation was done upon one of the patients, who had a more than usually large stomach. It was equally successful; the patient could attend to himself with ease, and at no time was there any discomfort experienced from leakage—the oblique direction of the canal into the stomach preventing this occurrence in both operations.



In most of the Witzel's operations, the patients wore the tube in the canal more from the dread of the canal closing than from the real contraction that took place.

Gastrostomy was, in four of these cases, done only to give the sufferers temporary relief, which it certainly did accomplish. Unless the patient is moribund before the operation is undertaken, there is little risk in performing it.

These operations are easy of performance, and I have no doubt will be further simplified. In fact, a modification by Mayo Robson of Ssabenjew-Frank's operation is completed by four stitches and the insertion of two hairlip pins.

In Marwedel's operation, which is a further modification of Witzel's, the canal for the tube lies between the muscular and mucous layers of the stomach, and is said to give still better results; the canal shews less tendency to contract, and the operation can be more safely performed.

In one of the cases it was done for a stricture following a gumma that had destroyed a portion of the œsophagus, leaving a fistula in the neck. At a later date I had intended performing a plastic operation to close it, but unfortunately malignant disease supervened upon the original trouble.

The prolongation of life in malignant disease ranged from 9 days to 8 months. The other case, which could not be classed as malignant from the first, lived 31 months ( $2\frac{1}{2}$  years).

This operation I am convinced is justifiable in malignant disease, if for no other reason than for the relief of the distressing symptoms of hunger and thirst.

*Gastrotomy.*—The four cases I have recorded are cases of exploratory gastrotomy to determine the cause, if any, of the symptoms complained of.

The peritoneal cavity is opened above the umbilicus, and the contents of the stomach squeezed into the duodenum. The incision into the stomach I find most useful is a free opening, 2 to 3 inches long, over its middle third and parallel with its long axis. Through this, when the edges are held well apart, with the aid of a small electric exploratory lamp, nearly all the surface of the stomach can be seen. The finger can from this point reach almost any part of the cavity.

In my first case, I expected to find ulceration on account of the prolonged and intractable vomiting. We found no indication of disease, and in great disgust sewed up the wounds. Vomiting ceased the next day and has never recurred—now several years since the operation. She was a highly neurotic woman and had actually acquired

the habit of being able to vomit at will, when the doctor or nurse was present.

In the second case, a cancerous, nodular tumour growing from the cardiac end of the posterior wall of the stomach, that could not be felt by palpation, was easily felt and found to be inoperable.

In the third case, adhesions caused great pain, and rendered the patient absolutely incapable of work.

In the fourth case, the symptoms were due to the constriction produced by two puckered scars on the pyloric end of the stomach, the result of former ulceration. The interior of the stomach was healthy. Gastroplasty was performed by sewing the incision up transversely to its long axis.

The result in cases 1 and 4 was good; in case 2, it did not shorten life. Case 3 developed bronchitis and died, which is a risk every patient is subject to if he undergoes such an operation. From a post-mortem made in this case I found two small cicatrices—with otherwise healthy conditions of the stomach—which tends to the supposition that the breaking down of the adhesions would have resulted in a cure.

*Pylorectomy.*—Performed in the manner described by Murphy, this is without doubt the simplest and most rapid method. It is a modification of Kocher's, differing from it by inserting one half of the button in the open end of the divided duodenum (the other half being inserted into a fresh incision made in the posterior wall of the stomach).

Rapidity of operation in these cases is a very important factor as regards their success; prolonged operations generally prove fatal.

Suitable cases for pylorectomy require that the cause should be cancer of the pylorus, when the growth is not too extensive and is free from involvement of contiguous structures, and the condition of the patient is not feeble and cachectic. In these cases the shock received and the time occupied in performing the operation is not great. It was astonishing how rapidly the patients recovered from the operation.

All these cases were operated upon for cancer. My first—which lived only 12 hours—should never have been attempted. The man was too weak to survive any abdominal operation. He had practically been starved for weeks before admission and had not even strength enough to stand without assistance. Since my experience with this case, and two other cases of the same kind that I performed gastro-enterostomy for, and which terminated fatally, I have made it a rule that the patients must be able to stand up and walk without help; otherwise they cannot possibly survive the shock.

The other two cases lived on an average over 11 months, and in both the growths returned in other organs. The duration of life in some

of the recorded cases of pylorotomy reaches eight years and over. It is possible that some of these were really cases of pyloric ulceration with extensive infiltration of the adjoining parts. In one of my own, which I shall refer to later on, I performed posterior gastro-enterostomy, because the adjoining structures were involved and a radical operation was out of the question. She is still alive, now three years since the operation, and the large mass felt previous to the operation has disappeared. This case at the time of the operation was thought to be pyloric cancer.

*Gastro-enterostomy.*—Is the most frequent, most useful, and most simple of all the operations performed upon the stomach. The frequency of the operation is evident when we think of the number of conditions under which it is done—pyloric cancer, pyloric ulceration and stenosis (non-malignant), gastric ulcer, dilatation of the stomach, and for intractable chronic dyspepsia and hyperchlorhydria.

Its usefulness is beyond question: the relief it affords in all these conditions is striking, and in some absolute. Nothing can be simpler than this operation, performed with a Murphy button; and considering the relief it gives it should be more frequently and earlier resorted to. Personally, I have used this method in 14 cases, and in only one of these was there any drawback to its employment—and that was in a case where the button fell back into the stomach. In my two cases that died from the shock, I examined the union (?) and found it perfect.

In intestinal anastomosis I have not found the button so successful. As in one case, the lumen of the button became completely plugged with faeces, which produced great dilatation of the proximal portion of the intestine, leakage, and death. In several other cases I have had leakage, but as I generally make a point of bringing the anastomosed gut into one or other loin and place a drain on both sides of the gut, the general peritoneal cavity becomes walled off in three or four days, by which time a fistula will have formed. This fistula closes without operation in a week or two. Contraction of the orifice has not followed any of the operations up to the present.

In the earlier operations, the intestine was united to the anterior wall of the stomach (Wolfer); but, unfortunately, by this method the button is more liable to fall back into the stomach, as I have previously mentioned.

As to the other difficulties which are likely to arise from an anterior gastro-enterostomy, such as regurgitation of the contents of the stomach back through the jejunum and duodenum, carrying with them the contents of the common bile duct, producing fatal vomiting, and the jejunum pressing on the transverse colon, causing intestinal obstruc-



tion; I have, fortunately not met with any. Mr. Mayo Robson, in his "Address on the Surgery of the Stomach," still prefers anterior gastro-enterostomy either by simple suture or by the aid of his bone bobbins.

Posterior gastro-enterostomy (Van Hacker) has undoubtedly been the better operation; the position of the patient in bed favours the passage of the button, which is not so liable to fall back into the stomach, and allows the more ready escape of the contents of the stomach. This operation is as easy to perform as the anterior gastro-enterostomy. The danger of infection is greatly minimized if the purse-string sutures are inserted both in the stomach and intestine before making any opening into either of them (according to the rules laid down by Dr. Murphy). This operation is so well described in any book treating upon this branch of surgery that it would be superfluous for me to do so in this address.

Finding the jejunum does not present the difficulties that some surgeons would have us believe. It is readily found after pulling up the omentum and transverse colon; then, by passing the hand along the meso-colon to the left of the spine, find the upper border of the mesentery of the small intestine, and close by the jejunum can be felt, or to make sure, seen, emerging from the side of the spinal column. If you rely upon touch, follow it forward for 10 or 12 inches, and then back again to the spine.

Should the opening made in the meso-colon be too large, close it with a few stitches to avoid a loop of intestine slipping through it, as Dr. Keen suggests.

The passage of the button has taken from 11 days to four months. The delay in its travel has not given rise to any unpleasant symptoms in any of my cases.

For inoperable pyloric cancer this operation only prolongs the patient's life and makes it more endurable by relieving him from constant pain and vomiting. They eat and sleep well after the operation. Some surgeons have gone so far as to say that unless pylorectomy can be done, gastro-enterostomy is not justifiable. This, happily, is not the opinion of the majority of surgeons; for the relief, although only temporary, justifies the procedure. And if when we open the abdomen, we see that by very little additional risk we can place the sufferer in a more comfortable state, I think we should do so.

Again, in some cases we may be mistaken as to the character of the growth, as in this case referred to in pylorectomy.

A woman aged 63 with almost complete pyloric obstruction, the pylorus was found involved in a large mass the size of my closed fist, moveable above but below extended into the head of the pancreas. There



were enlarged glands in the gastro-hepatic omentum and great omentum, and, owing to the extent of the disease in the pancreas, I decided to content myself with posterior gastro-enterostomy. This was done two and half years ago, and the patient is still alive and in excellent health. From the result, it looks like a case of non-malignant ulceration of the pylorus, although the pathologist who examined a gland that I removed at the time reported it to be malignant.

In cases of pyloric ulceration the relief it gives is absolute. By the rapid emptying of the stomach it removes the source of irritation, the food escapes by the new opening, as the spasm of the pylorus that is supposed to exist in these cases is sufficient to prevent its passage over the ulcerated pylorus, and allows the ulceration to heal.

I saw an excellent example of this in a miner, aged 61. The ulcer was situated upon the posterior half of the pylorus, and a scar marked the position on the surface of the stomach. Although the lumen allowed the forefinger to pass, the disease produced considerable dilatation of the stomach from the resistance to the passing of the food.

For simple gastric ulcers which are intractable to medical treatment, where there have been recurring attacks and the patients are rendered unable to follow their employment or enjoy life, and are in constant misery, gastro-enterostomy is justifiable and the only treatment likely to cure them.

A most interesting case of gastro-ulceration with acute hæmorrhage occurred in a patient aged 41. The symptoms dated back 15 years. For all these years she had suffered great pain after food, with the other accompanying symptoms, and had to be cautious to eat only the most easily digested articles of diet; and for the last two years only liquid food. In 1898, in the course of four days, five attacks of acute and profuse hæmorrhage occurred which nearly proved fatal, and from this she was several months recovering; and ever since, stabbing, pricking pains under the left breast and shoulder blade never left her. When she had sufficiently recovered, on more than one occasion I tried to prevail upon her to let me operate, but she would not hear of it. My object was to examine the stomach, break down adhesions and perform posterior gastro-enterostomy. However, on Dec. 27th, 1900, she had two more profuse hæmorrhages that rendered her blanched and pulseless, and on the following day had three more smaller hæmorrhages of a brighter red colour. This indicated that the bleeding was still going on. An ice-bag over the stomach and the usual treatment was pursued. The question to be decided was whether or not to cut down upon the bleeding-point. The patient and her friends were anxious for me to do so, knowing the serious condition it had reduced her to on the former

occasions; and as the bleeding continued I thought it justifiable to operate. Another reason that helped me to arrive at this decision was the fact that only a few months previously I had witnessed the death of one of my patients from hæmorrhage resulting from a gastric ulcer. The percentage of deaths from this cause is low; it is said to be only 5 per cent.

Before beginning the operation, she was transfused with three pints of saline solution and a 1-30 gr. of strychnine given. On opening the abdomen, the stomach was bound by adhesions to the under surface of the liver and anterior abdominal wall. The adhesions were carefully broken down in all directions; then the stomach was examined externally, but there was no thickening to be felt in any part of the organ.

A horizontal incision was made over the centre of the stomach; it contained about a pint of mucous and bright blood. After wiping this up with sponges on holders, a careful examination of the interior of the stomach was made. A clean sponge on a holder would return unstained from the cardiac end, but whenever it was passed towards the pylorus it was always bloodstained. A careful search was made in the suspected region, but I could not locate the bleeding-point. I was just about to close up my opening when I found the bleeding had increased. As I pulled down the lower edge of the incision, I saw the blood flowing freely from two points in the opposite sides of a small, oblong ulcer one-half inch by one-third inch. These two points were tied and the bleeding ceased. The ulceration was not deep, and did not extend through the mucous coat. About two inches from it there was another ulcer, but there had been no hæmorrhage from it. The stomach was quickly sewn up and the operation completed by performing a posterior gastro-enterostomy. As the patient shewed signs of failing, she was transfused with 60 oz. of saline solution. Respiration also became so very shallow and weak that before the operation was completed a temporary tracheotomy had to be done. The after history of the case was slow but uneventful. Her condition has gone on improving, and at the present time her sister tells me she can enjoy any ordinary food that is put before her.

Operative treatment in this case fortunately turned out successfully, and the history of the former hæmorrhages justified the extreme measures; but, as a routine practice, I think it a doubtful procedure.

Mayo Robson in his Hunterian Lectures gives the mortality in operative treatment as 64 per cent. as compared with 5 to 10 per cent. in cases treated medically. Still, every case has to be treated on its own merits.

*Gastro-enterostomy combined with gastro-plication.*—In cases of dilata-

tion of the stomach where medical treatment has been carried out for months or even years, and only affords temporary relief, the patient gradually losing weight and strength, gastro-enterostomy should be resorted to. One of the most interesting and satisfactory cases of the series was one of gastrectasis—an enlargement of the stomach with motor insufficiency. (Dr. B. F. Curtis, *Annals of Surgery*, July, 1900).

G. G., a tall and delicate-looking young man, 21 years of age, consulted me in July, 1900. For six years he followed the occupation of waiter; family history good; had measles when a youth, and four years ago was in a coach accident and rendered unconscious for 12 hours after. He was also severely bruised all over the front of the abdomen. A year later he began to be troubled with a feeling of fullness and a pain of a drawing, cramping character after food. The cramps at first would only come on after going to bed, and be relieved when the flatus—which caused terrible rumbling and noise in the stomach—came up. At first, there were intervals of two or three weeks between the attacks. He had a great thirst, and used to drink large quantities of fluid, a quart or more of milk or buttermilk at a time, and would often throw it up whilst still cold. Six months after the first onset of his symptoms, vomiting came on and kept up for months, usually about twice a day—which always relieved the discomfort. The vomit was of a thick, frothy, mucous character, but there was never any trace of blood. When the vomiting ceased, it was followed by troublesome pyrosis. Always on waking in the morning he would be “blown up like a poisoned pup,” as he put it, with gas, but after walking about it dispersed; losing weight and strength gradually and continuously. He told me: “I have taken medicines all the time, both for my digestion and for my bowels, which have been very constipated; washed out my stomach for the last eight months, sometimes daily or every other day. At first, I felt relief from it, but very little latterly. I could pour a gallon of warm water into it. I was very fond of ham, and would sometimes try a very thin slice of it; if the stomach retained it, pieces could be seen in the washings 24 or 36 hours later.” For the last year he had been obliged to restrict himself to milk and soups, and these would often come up six or eight hours after. A severe water-brash was constant. On examination, the body was poorly nourished, but the abdomen was prominent as if he were suffering from an abdominal tumour. The prominence was more evident on the left side and extending from above the umbilicus to the symphysis pubes, resembling the outline of the stomach. The percussion note over this area was of the same character and pitch and the loud succussion sound could be easily obtained—and in fact heard when he moved about. There was no



pain on palpation, nor could I feel any tumour. Inflation of the stomach with carbon dioxide rendered the outlines still more evident, and when the stomach-tube was passed well down the patient said he could feel the end of it just above the pubes. His stomach was washed out daily for a week, with very little relief, and then fed on peptonized foods. Operation was decided upon and the usual preparations gone through. An incision  $3\frac{1}{2}$  inches long was made in the middle line above the umbilicus. On opening the peritoneal cavity I lifted up each edge of the wound and could readily see the upper border of the stomach opposite the centre of my wound. The pylorus was first examined. Its position was somewhat lower than it should normally be, but it felt soft, healthy and free from thickness, and the stomach wall could be invaginated into it. The organ was then delivered through the incision on to the abdominal wall. It was immensely enlarged. Unfortunately it never occurred to me to measure it whilst it was outside. The largest size œsophageal bougie was laid over the centre of the stomach parallel with the greater curvature, and the walls sewn over it, as in Witzel's operation. About 20 interrupted silk sutures were inserted and tied, and then the bougie withdrawn. This procedure diminished the area of the anterior wall by at least one-third. It is impossible to apply the same method to the posterior surface, so that I completed the operation by performing a posterior gastro-enterostomy.

The resulting shock was not great and the patient made a good recovery. In three weeks he was allowed out of bed and was able to eat white fish, chicken, baked potatoes, bread and toast, feeling quite comfortable after his meals. It is now a year since the operation; he has been working as a cook at a restaurant for the last eight months. In reply to enquiries, he writes that he feels quite well, can eat anything except salt corned beef and cabbage, and has gained 35 pounds, and says he can take as long a bicycle ride as any man.

Ewald gives as the etiology of dilatation of the stomach two causes: 1st, mechanical contraction of the pyloric opening; 2nd, absolute or relative weakness of the expulsive power—that is to say, an atonic condition of the muscular wall. The case evidently comes under the second cause, because there was no thickening of the pylorus or narrowing of its lumen. The history points to impaired muscular tone, probably brought on by the bruising of the abdomen injuring the muscular fibres of the wall of the stomach at the time.

The indications for operation in this case were the very dilated state of the stomach, the absence of any relief from lavage and strict diet, the patient rendered unfit for work, gradually losing his strength, and having to be supported by the other members of his family.



Whether the relief could be obtained by posterior gastro-enterostomy alone, I am not prepared to say, but I firmly believe that the gastro-plication assisted in the rapidity of the relief obtained, though I feel sure that the latter alone would not have brought about the same successful result. For gastro-plication there are a variety of operations—Bircher's, Weir's, Brandt's, Bennett's—but performed in the manner that I have described it is easier of performance, rapid, effectual, and neat in appearance.

Mr. Bennett, in an article in the *British Medical Journal*, February, 1900, speaks of gastro-plication as an unscientific operation, but one which it was stated had been performed with benefit in two cases on the Continent. He also refers to it as a useless measure in a case that was not relieved and eventually terminated fatally. He says: "Had I opened the stomach and examined the pylorus, as I now should do, there is, I submit, no room for doubt that I would have detected the unnatural condition and a curative operation have been performed instead of the useless measure adopted."

I may here mention a case of gastro-plication only where I found the stomach dilated and prolapsed, the patient suffering from the most troublesome hyperchlorhydria. I found no thickening of the pylorus and therefore contented myself with gastro-plication after Bennett's plan, and in addition uniting the stomach to the anterior abdominal wall by three silk sutures. As long as the patient remained in bed he felt comfortable, but soon after getting up and moving about his symptoms returned. Had I performed posterior gastro-enterostomy I do believe this patient would have been cured.

*Gastro-enterostomy combined with gastrolysis.*—This patient was operated on  $4\frac{1}{2}$  years ago for double salpyngitis with adhesions. For  $2\frac{1}{2}$  years afterwards she enjoyed good health: then symptoms of dyspepsia followed and grew worse and worse. Pain was of a dragging, contracting feeling in the pit of the stomach, relieved by lying down but immediately brought on should she stoop to lift anything from the ground. Never suffered from acidity, nor did she vomit as long as she lived upon liquid food, but often experienced discomfort. Washing out the stomach relieved this, and food-like germia was often washed out four hours after taking it. For 11 months she was under the care of several well-known specialists in the States, treated for achlorhydria. She was temporarily improved by the treatment, but a few months after her return home she became as miserable as ever. An exploratory operation was decided upon. The stomach was found slightly dilated and pouched, this condition being produced by a few gastric adhesions, but principally by the adherent condition of the great omentum to the scar

of the wound of the former operation. After separation of the adhesion, the stomach returned to its natural shape. The pylorus felt natural and as the symptoms pointed to a condition of gastrectasia I concluded that it was also safer to perform a posterior gastro-enterostomy. She stood the operation well, her symptoms have completely disappeared. She is fast recovering her former health.

These are the cases for which I performed gastro-enterostomy with permanent and uniform relief in all, except the cases of pyloric cancer, which were only temporarily relieved. This result is encouraging and this form of treatment is undoubtedly applicable to a large class of cases the subjects of which go through life at present in the utmost misery.

Gastrolysis, freeing the stomach from adhesions has been performed in several of the previous cases as numerous conditions both inside and outside of the stomach give rise to them.

*Perforating gastric ulcer.*—The only case that has occurred in my practice was a case of hour-glass contraction of the stomach in a lady 39 years of age. The history briefly was as follows:—

Symptoms of gastric ulcer began 20 years ago: at one time the pain resembled spinal caries and was diagnosed as such; her medical attendant had the courage of his convictions and put her up in plaster jackets and spinal supports for two years. On a Sunday evening she ate a dinner of roast lamb and vegetables and at midnight was seized with severe, tearing pain in the epigastrium. She could not keep still, but screamed and rolled about the bed. A hypodermic injection of morphia to ease the pain and a dose of castor oil were given. The pain was lulled but never entirely ceased. A morphia tablet was given on the following day. On Tuesday 36 hours after the first sign, she went to the hospital and walked from the door to the elevator a distance of 50 yards. I was asked to see the patient 36 hours after the first onset of pain and from the symptoms it was evident that we had to deal with a case of acute peritonitis. The differential diagnosis was between general peritonitis from a perforated appendix and a perforated gastric ulcer. The patient was in no condition to go into her previous history, but she was able to tell us that the severe pain started in the epigastrium, after which she attempted to vomit but did not succeed in bringing up anything. On palpation, the most painful area was over the right iliac region.

An incision was made over the region of the appendix, according to McBurney's method, this being the point of greatest tenderness, but the appendix was found to be healthy looking. The peritoneal cavity was found full of a greenish, opaque fluid, which I washed out with

several gallons of hot water. Another incision was then made in the middle line above the umbilicus. The stomach and omentum were matted to the anterior abdominal wall. After loosening the stomach, the hour-glass condition was evident and above the middle of the lesser curvature there was a round hole through the gastro-hepatic omentum which would admit the tip of the little finger. This opening, I found, led into the lesser omental cavity, and from it some milky fluid escaped.

By lifting the omentum and colon up, and tearing through the mesocolon, the posterior surface could be examined, and a valvelike perforation in the constricted portion of the stomach was found. Squeezing upon the cardiac portion of the stomach, its contents could be seen escaping through it. Seven or eight sutures were inserted across its long axis performing a gastroplasty.

The abdomen was thoroughly washed out, drains were inserted—one above the stomach under the liver, and another into the lesser omental cavity below the stomach, and from a lower incision another drain into the pelvis. These drains were removed within 48 hours, and but for a phlebitis in one leg her recovery was uneventful. It is now three years since the operation was performed and she has been steadily improving in health ever since, being able to ride a bicycle or walk 5 or 6 miles without being fatigued. The difficulty in this case was to make out the exact condition of the parts. This has led to several fatal mistakes, within the last year, 3 cases have been reported in the *British Medical Journal* where the cardiac division of the stomach was not found until at the post-mortem, and an operation completed by dealing with the distal or pyloric portion of the stomach.

In the first place one should bear in mind that such a condition does exist, and in the second place one must not be satisfied until the outline of the stomach is clearly defined.

In my own case after examining the pyloric end and in proceeding towards the cardiac end I found it terminating in a narrow neck which I knew could not be the œsophagus reaching down to the middle line, and therefore it was quite evident what I had to deal with.

The cause of the constriction was a cicatrization of an old ulcer. The constriction in the majority of cases is found as in this case near the middle of the stomach. For an able and exhaustive account of the surgical treatment of hour-glass contraction of the stomach I refer you to a paper by Dr. Watson of Boston, read before the American Surgical Association, in May, 1900. This condition of the stomach presents itself in two forms—congenital and acquired. In several recorded cases of the former, the patients were free from any gastric symptoms.



but there is no example on the other hand in the acquired cases that gastric symptoms were not also present. This condition of the stomach has been frequently correctly diagnosed and operated upon. Distending the stomach with carbon dioxide, or with water, the water is heard rushing through the contracted portion; and again by introducing bismuth in solution and taking an X-ray photograph of the stomach. The operations that may be resorted to for the relief of this condition of the stomach and gastric-plasty, gastro-gastrostomy, gastro-enterostomy.

*Perforating duodenal ulcer.*—This case I saw 24 hours after the perforation occurred. The history resembled that of perforation of the stomach. The peritoneal cavity was full of purulent fluid. The seat of the perforation was found by the sudden liberation of a collection of dirty fluid intermixed with particles of food from the right hypochondriac region. The opening, which was close to the pylorus, was closed with a few Lembert sutures. The toilet of the peritoneum was attended to in the same manner as in the preceding case. The patient lived only 14 hours after the operation.

Early operation in these cases gives the only chance of recovery. There were only a few cases of recovery from perforating duodenal ulcer until recently. Now that the diagnosis is thoroughly understood, and the signs of perforation are more readily recognized and operation resorted to without delay, the records are fast improving. In all cases it is best to simply suture the ulcer and not try and excise it.

In the early days of abdominal surgery the surgeon occasionally closed his abdomen with draining the peritoneal cavity, having failed to find the perforated organ. But I venture to say that the average surgeon who practices this branch of his profession these days seldom fails. The common sites of perforation and causes which give rise to peritonitis are so familiar to them, that they run over all the likely starting points without loss of time and soon arrive at the seat of the trouble. Some able and well-known surgeons of the day tell you that if you open the peritoneal cavity for any operation, such as ventral fixation, appendicitis or any other intra-abdominal operation, that you should pass your hand over and examine all the other organs. This I consider is too heroic and sweeping—unless you are doubtful as to the diagnosis.

Mr President and Gentlemen I have touched only in a very fragmentary manner upon certain points in this very interesting field of surgery, which, with improved means for the correct diagnosis of the conditions of the interior of the stomach, will enable us to relieve many more unfortunate sufferers.



## INFECTIOUS PNEUMONIA.\*

BY

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For any man to have got up a few years ago and advocated the infectious character of pneumonia would have been disputed; epidemics have been described but questioned; but now we have bacteriology lending the weight of its evidence in support of clinical observation. Articles written under this heading are very scarce, and it is a difficult matter to find enough written upon this subject to enable one to come to a definite conclusion upon any one point. Most writers will convince you that influenza has an undoubted influence upon the infectious character of pneumonia.

Since beginning practice I have seen two epidemics of pneumonia that I am positive were not associated with influenza. In the pneumonia of influenza, in my practice, the onset has been very insidious, in fact so much so, that in a few cases the character of the sputum has been the first intimation that pneumonia was present. This has not been the history of the cases that I have placed under the class infectious pneumonia; in the latter the onset is very different; severe rigors followed by fever and pain on one side or other has been noted in most of these cases.

*Case I.*—On Sunday, April 7th, 1901, I was called to see E. M., aged 10 years. Found the child crying with pain in left side. The mother informed me that she had just got her “heated up” after a severe chill. Temperature 105°, pulse 130, respiration 42, slight hacking cough, no expectoration, marked pleuritic friction sounds. The following day there were signs of pneumonia consolidation, cough somewhat loose, expectoration scant, but bloody. The case ran through a usual course and on the sixth day terminated by a crisis. The child made a good recovery.

*Case II.*—On Monday, April 8th, L. M., sister, aged 14 years, was seized with severe chills and high fever, and developed a right-sided pneumonia, which terminated by a crisis on the ninth day, only to be followed two days after with a left-sided pleuro-pneumonia, which proved fatal on the 23rd day of April, the seventeenth day of the disease.

*Case III.*—On Thursday, April 11th, Alice M., sister, aged 15, was seized with chills, fever, cough and pain in left side. Ran through a

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\* Read before the Canadian Medical Association, August 28th, 1901.

typical course of pleuro-pneumonia, which terminated by a crisis on the tenth day of her illness, and made a good recovery.

*Case IV.*—H. M., aged 12 years, brother, developed a pneumonia on the 13th of April. In his case there was no decided chill. The usual pleuritic sounds were present early, the case assuming more of a pleuritic character. The recovery was quick. The patient was ill about two weeks.

Let me draw your attention to a few facts in connection with these cases before going into the bacteriology of pneumonia.

First, there was no influenza in our town at the time, nor had there been for some months. They were all children of the same family, and occupied the same rooms for the most part. The onset in each case was quick and the termination marked. Last March and the early part of April with us was remarkably dry and cold, and where the house was situated there was a very low level of subsoil water, two points noted by Dr. Whitelegge as favourable conditions for the production of this disease.

#### *Bacteriology of Pneumonia.*

The first organism to be described was by Friedlander. He described it as an organism with a capsule and got growths outside the body. He considered that this was the cause of the disease.

A short time afterwards Frankel described another which is shorter and thinner and also with a capsule, but difficult to cultivate outside the body.

Friedlander's organism is known as the pneumobacillus, Frankel's, as the pneumococcus. The latter is the important one; and while the pneumobacillus is *easily* cultivated, the pneumococcus is with *difficulty*. There is very little doubt that many organisms which Friedlander described as his were those of Frankel, but he got the two confused.

*Frankel's pneumococcus.*—This organism can be readily found in the sputum in pneumonia and also in the lung after death. The following are its characters:

It is rather a minute organism, 1 micron (1-25,000 in.) in length, and a little less in thickness. It usually occurs in pairs, which are arranged so that the adjacent ends are blunted and the distal pointed. It is thus called the Diplococcus Lanceolatus. Then it has a distinct capsule, which is a gelatinous swelling of the envelope. It may occasionally be found in numbers of more than two together, *e.g.*, in short chains; but in the chains the diplococcus arrangement can be seen. It stains readily and *holds the colour with Gram's method*.

The cultures closely resemble those of the streptococcus in character,

but the colonies and growths are even less abundant and it dies out easily and is very delicate. The colonies tend to remain separate. It does not liquefy gelatin, but the best medium for growth is agar serum. It grows best at 37° C. (99.5° F.), but also grows as low as from 21°-22° C.

*Pneumobacillus*.—This organism is larger and pleomorphic, short and more like a bacillus. It also has a capsule. It stains easily, but *does not stain by Gram's method*. This organism grows easily on ordinary media, rapidly on gelatin, and forms a characteristic growth in tube cultures. The disc of the growth on the surface is somewhat heaped up and there is a growth along the needle track. The growth has been compared to a nail driven into the medium. Its colour is whitish yellow. It does not liquefy gelatin, but sometimes develops gas bubbles. On agar it forms an abundant viscid, mucoid-looking growth. On potato it grows and forms a white layer. The pneumococcus has thus more the characteristics of a true parasite than the pneumobacillus, which flourishes readily outside the body.

#### *Relation of these Organisms to Pneumonia.*

*Pneumococcus*.—This organism is found in large numbers in the sputum and throughout the hepatized lung, but *in largest numbers where the inflammation is spreading*. It is also abundant in pleural exudations and in complications. There is little doubt that the pneumococcus is practically *always* present in typical pneumonic conditions.

Pneumonia is not a specific disease, and may be caused by other organisms, but, nevertheless, in typical croupous pneumonia the pneumococcus is always present. It occurs in a number of other conditions. In children it is common in otitis media. It is also found in many cases of meningitis, both those secondary to ear disease and those in epidemic cerebro-spinal meningitis. It also occurs in ulcerative endocarditis, pericarditis, and in empyema. It is very commonly the causative organism in empyema in children and also in adults after pneumonia. It may even be found in suppurative periostitis and peritonitis. In this we have an analogy to the distribution of the streptococcus. The variability of its effect is probably due to the virulence of the organism. Acute croupous pneumonia is the condition analogous to erysipelas. In both conditions there is an acute inflammatory state, which spreads by direct continuity of tissue, and in both, after a time, the disease spontaneously comes to an end. The pneumococcus is present in the sputum of a certain proportion of healthy individuals, although here it usually has a low degree of virulence. This circumstance was supposed to be evidence that it could not cause the disease, and was looked on as a

sputum bacillus. But we now interpret the facts differently. We see that in health it may be in the sputum, but in conditions of depression of vitality the organism can invade the lung and produce the disease. It has also been found in some forms of broncho-pneumonia. In hypostatic pneumonia it is usually associated with pyogenic organisms.

In influenza pneumonia the influenza bacillus may be present alone or with the pneumococcus. This is correspondingly true of diphtheria. Sometimes the diphtheria bacillus is found in broncho-pneumonic patches and sometimes with the pneumococcus.

In typhoid pneumonia the typhoid bacillus may be present along with the pneumococcus and occasionally the bacillus coli also. It will thus be seen that a close analogy exists between the behaviour of this organism and that of the streptococcus, viz. :—

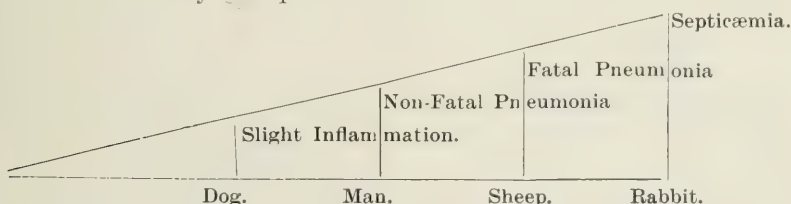
(a) Both may produce a rapid inflammatory condition.

(b) Both may produce inflammatory conditions of different characters.

(c) Both may produce suppuration.

*Experimental.*—It is found that different animals have a varying degree of resistance. Rabbits and white mice are among the most susceptible. In them the disease produced is not pneumonia, but septicæmia. The organisms multiply in large numbers in the blood. Sheep are not so susceptible, and if the pneumococcus be injected in the lung, a pneumonic condition is set up, which is usually fatal. Dogs are still more resistant. The human subject is between the sheep and the dog as regards susceptibility.

As the result of inoculation different results are got in different animals. It may be represented thus:—



Septicæmia indicates the highest susceptibility. In the case of the pneumococcus the rabbit is the most affected.

The organism, then, is one whose virulence can be varied, and if attenuated it may produce even in the rabbit a slight inflammation; whereas if it passed rapidly through a series of susceptible subjects it has its virulence rapidly exalted and may produce not only a fatal pneumonia, but an acute septicæmia.

*Friedlander's Bacillus.*—It is present in a small proportion of cases



of pneumonia and as a result to be expected he mistook the pneumobacillus for the pneumococcus.

Occasionally the pneumobacillus is present in inflammatory complications, *e.g.*, in empyema, and no doubt has a certain action in producing inflammation and suppuration, but its exact part in pneumonia is subsidiary.

*Staining by Gram's Method.*

1. Cover glass specimens stained five to ten minutes in anilin gentian-violet.
2. Drain off superfluous stain and immerse a-half to two minutes in:

|                     |            |
|---------------------|------------|
| Iodine . . . . .    | 1 part.    |
| Pot. Iodid. . . . . | 2 parts.   |
| Water . . . . .     | 300 parts. |
3. The purple colour of gentian violet changes to dirty yellowish brown.
4. Wash in alcohol,—purple colour returns.
5. Continue with alcohol till no more colour runs off the coverslip.
6. Wash in water, dry, and mount.

## SYPHILIS AS SEEN BY THE OPHTHALMIC SURGEON.

BY

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Owing to the manifold types of tissue and the delicate functions involved in pathological conditions affecting the visual apparatus, we have a combination which is capable of developing well-marked symptoms from trivial lesions, such as would almost certainly escape the notice of the most astute observer when occurring in any other part of the economy. For this reason it falls to the lot of the ophthalmic surgeon very often to discover the presence of active syphilitic virus where the disease had long been considered cured, or where it had been so long latent that the subject thereof cherished the belief that he had nothing more to fear from his constitutional affection; and it often happens that the illusion has been strengthened by flattering assurances on the part of hopeful medical counsel. Although gross lesions such as acute iritis, gummatous growths in the uveal tract, retinitis with profound changes in the vitreous chamber and great disturbance of vision, paralysis of the third nerve, optic neuritis with palpable signs of intracranial mischief, may point so obviously to the nature of the trouble that even the inexperienced physician can hardly make an error of diagnosis, there are many other less conspicuous evidences of the imperfectly controlled constitutional fault, which enable an expert in ophthalmology to read between the lines—so to speak—and throw light upon what is going on by a skilful interpretation of obscure and often unsuspected signs. The subject is too wide to treat in detail. I shall therefore limit myself to some clinical facts and personal observations which I hope may prove interesting and perhaps instructive to all who care to follow my remarks.

With the exception of rare cases in which primary syphilis makes its appearance in the eyelid or conjunctiva, the ophthalmic surgeon is never called upon to treat the disease in this stage. In the secondary stage iritis is sufficiently common to bring a good many cases under his notice. Hereditary syphilis contributes a fair amount of material to his clientele, but by far the largest share of his experience is in connection with the tertiary period. In this class of cases the disease has often been latent or apparently cured for a long period, when some ocular

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\* Read before the Canadian Medical Association, Winnipeg, August 29, 1901.

disturbance makes its appearance and demonstrates that the routine treatment thus far employed has only sufficed to mask the progress of the disease. I do not intend to raise the question as to the absolute curability of syphilis, and I am not in a position to estimate even approximately the chances of cure when the most approved methods of treatment have been faithfully followed from the outset. It may be that there are multitudes of cases in which fortunate results are attained, but my own observations have sufficed to establish the fact beyond all controversy, that a great many syphilitics, who have undergone routine treatment for months, or years, have not become free of the virus, as they present from time to time unmistakable evidences of its continued presence in such ocular lesions as come within the ken of ophthalmic surgeons. A brief general statement of the various syphilitic ocular lesions which have come under my own observation in the past 30 years may be in place. I shall omit syphilitic affections of the orbital walls and lacrimal sac.

Lesions of the eyelids and conjunctiva are decidedly rare and have been represented by a few cases of conjunctivitis during the course of muscular and papular syphilides of the skin. As later manifestations, I have also seen a few ulcerations of the palpebral conjunctiva, probably of syphilitic origin, and two or three of gummatous infiltrations of the eyelid, which have disappeared under the use of inunctions followed by large doses of potassium iodide.

The interstitial keratitis often associated with hereditary syphilis is an affection so common and so characteristic that every ophthalmic surgeon has many records of it in his case-books. It is usually, though by no means always, associated with certain dental peculiarities, first pointed out and correctly described by Jonathan Hutchinson. I have here a good plaster cast specimen of the "Hutchinson teeth" recently taken from a child presenting the characteristics of interstitial keratitis, and I take the opportunity of showing this specimen because I have found that a clear understanding of what constitutes the dental defects due to heredity syphilis is too often wanting, where we might reasonably expect an accurate knowledge of this subject. This form of interstitial keratitis is chiefly remarkable from the fact that its nature is seldom properly recognized by general practitioners, and consequently unsuitable, and too often harmful, treatment is pursued, the result being that many such eyes are practically ruined before they come to the ophthalmologist.

A true interstitial keratitis similarly characterized by grey infiltration and deep vascularity, I have seen occasionally as a tertiary manifestation of syphilis, which occurs as far as I am aware from my own observa-

tions not earlier than one year, nor later than three years, after the original infection.

There is still another variety of keratitis, characterized by superficial as well as deep, circumscribed, densely white opacities, varying in size from mere dots to infiltrations as large as two millimetres or more in diameter, not tending to ulcerate or become vascular, and attended with active signs of irritation, which I believe is distinctly a syphilitic lesion, though a very rare one.

As is well known, the interstitial keratitis of hereditary syphilis is apt to be associated with peripheral and perhaps a general choroiditis, and we must bear in mind that every form of syphilitic keratitis is attended with a tendency to iritis. A recognition of this fact gives us the key to the rational treatment of this class of cases, which should be soothing rather than stimulating; and some suitable mydriatic must be constantly used so long as the irritative symptoms are still conspicuous.

Of equal, and perhaps still greater, importance, are the syphilitic lesions presented by the iris. These are:—

1. Simple plastic iritis (or, sometimes a sero-plastic if I may be allowed the expression), by far the most frequent form of syphilitic iritis and occurring as an early secondary symptom.

2. Nodular iritis, sometimes called gummatous iritis, which I believe nearly always makes its appearance between six and nine months after the original infection, and very often when there is no other sign of syphilis present. The typical form of nodular iritis is, I believe, absolutely pathognomonic of syphilitic infection and requires neither history nor any other sign or symptom to establish the diagnosis. A more diffuse but rusty-looking thickening or infiltration of the sphincter portion of the iris sometimes occurs under similar circumstances and is almost equally characteristic as a sign of syphilitic contamination, belonging to about the same period as the more definite nodular variety.

3. A mild form of iritis associated with opacity of the vitreous and other signs which justify a diagnosis of choroido-retinitis to which the iritis is secondary. I am under the impression that this complex lesion belongs between the first and third years after the primary infection, but have not sufficient data to establish definitely the time limits. An ordinary iritis occurring in a syphilized person several years after infection is not necessarily to be regarded as a syphilitic lesion.

4. Scleritis, resembling the ordinary rheumatic form of this affection, and the much more formidable though fortunately rare gummatous cyclitis, are met with as distinctly tertiary syphilitic lesions.

5. A violent form of retinitis attended with much opacity of vitreous



and great depression of vision usually affecting both eyes, sometimes occurs as one of the earlier tertiary symptoms.

6. A milder, more chronic, and often relapsing form of retinitis is also not uncommon but is of later development.

7. Optic neuritis, when due to syphilis, I have only seen as a tertiary lesion. It may be either local, affecting the ocular and orbital portions of the nerve, but much more frequently occurs as a descending neuritis due to some coarse intercranial lesion and in connection with other signs of brain disease.

8. Finally we meet with disturbances of mobility due to syphilitic lesions of the nervous apparatus presiding over the muscular functions of the organs of vision. Considering the small size, isolated and thoroughly protected position of the ciliary ganglion, it has always seemed to me that this little mite of nerve tissue comes in for more than its share of the syphilitic poison. Nearly always monocular, irido-cycloplegia, due to disease definitely localized in the ciliary ganglion, is by no means a rare affection, and I believe in more than half of all such cases is the result of syphilis.

It is quite certain that a large proportion of paralytic affections limited to one or more of the extrinsic ocular muscles is due to syphilitic lesions occurring in the course of the several oculo-motor nerves, and besides these peripheral paralyses we also meet with many cases of central or nuclear origin incident to vascular or other degenerative changes in the central nervous system.

A somewhat formidable list truly, but I will venture to say that no ophthalmologist of ordinary experience has not had opportunities for observing the entire series; from which it follows that a large percentage of constitutional syphilis is not cured by the treatment in vogue. Therefore, assuming that syphilis is curable if properly treated, there must be something wrong with the ordinary methods of treatment. The fault may lie in the remedies employed or in the manner in which they are used. No doubt a certain proportion of cases are practically untreated from the first, or, through individual negligence beyond the control of medical advisers, the treatment is wholly insufficient; but even this will not account for many failures in cases where both patient and physician have made every reasonable effort to get rid of the disease. There is one significant fact to which I would direct particular attention. With the exception of a few instances in which no particular treatment had been followed, I do not remember having met with any case of recurring syphilitic lesions in which there had not been a long course of what I call the ordinary routine treatment by proto-iodide of mercury. This routine treatment appears to consist of proto-iodide in

pill form gr.  $\frac{1}{6}$  to  $\frac{1}{4}$  three or four times daily, varied at times by intervals during which potassium iodide is more or less vigorously administered. If this treatment occasionally permitted the development of fresh lesions during its progress such an occurrence might be explained as due to some idiosyncrasy of the patient or some fault in the quality of the preparation used; but, if one sees the most typical of all syphilitic lesions, viz., nodular iritis time and again occurring in persons who were actually then, and had been for a long time previously, saturated with proto-iodide, who would not be forced to the conclusion that proto-iodide of mercury, at least as ordinarily administered, is not a reliable antisypilitic. This, as a matter of fact, is just what we have seen over and over again.

More than this, in this class of cases, so soon as these very patients are put in a fit condition to take mercury in some efficient form, the lesions, which actually come on under the full influence of the proto-iodide, can be made to disappear like magic by other methods of administering the drug. Precisely the same thing holds good in regard to lesions which cause disturbance of motility; and they too can be cured with equal facility by the proper exhibition of mercury. In view of innumerable cases of temporary relief, if you like, but imperfect cure, whether you like it or not, I contend that ophthalmologists and perhaps specialists in other departments of medicine and surgery are justified in affirming that the proto-iodide treatment of syphilis, if not altogether a failure, still falls far short of possessing the merit its widespread use would seem to imply. I have often heard it said that one of the chief merits of proto-iodide as an antisypilitic is that when it does produce mercurialization, this is more readily controlled and more easily passes off than is the case with other preparations of mercury. My interpretation of this fact, if it be a fact, is that this drug has a proportionately less profound influence, and is therefore just so much less capable of exercising a curative effect. If I am correct in assuming that the numerous cases of constitutional syphilis coming under the observation of ophthalmologists are a proof that the treatment administered by those who have the management of the primary and secondary stages, or in a general way of the patient from the outset of his disease, is not as efficient as it should be, it will further be acknowledged that an imperfect method of treating constitutional syphilis is responsible for the subtle connective tissue and vascular degenerations which are well known to destroy the lives of, or relegate to the insane asylums, so many syphilitics at a time when they should still be in the enjoyment of perfect health and unimpaired vigor of mind and body.

If I am correct in my assumption, it is evident that the routine treatment of the present day has much to answer for, and there is urgent need of some other and better means of combating the infection.

### *Discussion.*

In the discussion which followed, Dr. Lafferty asked what treatment Dr. Buller had found most efficient in such manifestations of syphilis as he had described. If it were necessary to give mercury he would like to hear some expression of opinion with regard to the way of giving it. Dr. Shepherd agreed in the main with Dr. Buller as to the inefficacy of proto-iodide of mercury in syphilis and had long ago ceased using it in his practice. He relied chiefly on the old well-tried remedy, grey powder, and in later syphilitic lesions on potassium iodide in large doses.

Dr. Buller, in reply, said: The treatment in all cases coming under the care of the ophthalmologist is based on the belief that mercury in some form, administered in such a way as to cause the least possible disturbance to the digestive organs is essential. I have tried and thought well of grey powder and certainly prefer it to the proto-iodide, but I believe that the skin is the proper channel for introducing this drug into the system. Vapour baths are perhaps very suitable in some cases and in others hypodermic injections of mercury, but the most reliable and most efficient method is by the old-fashioned blue ointment, half a drachm or more thoroughly rubbed in morning and evening, and continued for a month or six weeks. At the same time the patient requires tonics and good food. Quinine in tonic doses is very helpful. The greatest care must be taken not to induce mercurial stomatitis. Patients who have been already over dosed with proto-iodide may require a period of rest during which the mouth and gums are to be made as clean and healthy as possible, before the inunctions can be used. After a course of several weeks' mercurial treatment, the patient is put upon increasing doses of potassium iodide, which must be well diluted. Two or three months of this treatment will suffice, and afterwards the so-called mixed treatment, mercury in very small doses combined with potassium iodide and continued for a long time, apparently suffices to protect these patients from future outbreaks of the disease.

## CLINICAL NOTES.\*

BY

GEO. T. ROSS, M.D., D.C.L.,

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### **Congenital Stenosis of the Larynx.**

A. B., aged 3 years, child of Hebrew parents, living in the Maritime Provinces, in good circumstances, was brought to me for difficulty of phonation. The child had never cried since she was born. When irritated or forbidden to have her own way, instead of showing her resentment by loud crying, she would give vent to a muffled sound as if a gag were held over her mouth. No other sound was ever uttered by the child. Deglutition was perfect and the nourishment of the body was natural, so that when I saw her she was a healthy, even a robust, child. The growth and health of the patient from infancy being normal, the parents did not seek other advice than that of the local practitioner until she reached the age of three years. I made special enquiries regarding syphilitic heredity or other dyscrasia occurring in the family connections near or remote, but failed to elicit any testimony sufficient to establish the origin of the malformation. No family history of similar growths could be obtained.

The whole difficulty being referable to the larynx, I proceeded to examine that organ, a rather troublesome matter with a fractious child, the parents of which had by over-indulgence rendered her disobedient and ill-tempered. Being very anxious to ascertain if possible the nature of the stenosis, after much effort I succeeded in obtaining a glimpse of the following condition:—

Mucous membrane of the larynx apparently healthy throughout. A web or band was seen stretching across the glottis, which bound the vocal cords together. The color of this band was lighter than the surrounding mucous membrane generally. Inspiration and expiration was conducted through an oval opening in the web, large enough to admit of the aëration of the blood when the child was not excited, but any excitement at once produced a cyanotic state.

The term stenosis is rather ambiguous, since nearly every deviation from the normal in this region is apt to obstruct the calibre of the laryngeal tube to a greater or lesser degree, but congenital stenosis is not an ordinary state, and thus I have thought it worth while to bring it before

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\* Read before the American Laryngological Society, Buffalo, June 21, 1901.



your attention for the purpose of discussion as to the line of treatment which is likely to give best results.

Arrested development of the larynx is sometimes found along with imperfection of the genital tract; and the respiratory apparatus being formed from the same source as the larynx, it is rare to find that organ mal-developed without some want of complete formation in the lungs, trachea, or bronchi. In this case no trace could be found of any divergence from the normal: indeed, the entire bodily development was otherwise perfect.

The case having been explained to the parents and the necessity for operative treatment set forth, very strong objection was made to any measures of an operative character, and the child was taken home until the parents could decide the matter.

### **Papilloma of the Epiglottis.**

J. D., aged 39, plumber, seen in Nov., 1900, complained of cough and pain upon swallowing, but the latter symptom was not severe and more like the sensation as of the presence of a foreign body. Empty swallowing caused more discomfort than in taking food.

Patient is a medium-sized man of good development and well nourished. Has lost weight recently and his work fatigues him more than usual. Cough was thought by patient to be due entirely to the throat trouble, but examination showed loss of resonance in the apex of left lung. Family history is decidedly tubercular, two brothers having died of phthisis pulmonalis.

On examination of larynx, it appeared generally anæmic. Epiglottis is red, tumified, and somewhat puckered over two-thirds of its area, beginning at the right aryepiglottic fold. To this extent it was double the ordinary thickness and its mobility was greatly diminished. The tumour was mostly smooth, but some elevated patches were noticeable here and there, while it was covered throughout with hyperæmic mucous membrane. No warty excrescences were present. The inter-arytænoid space was somewhat puckered and infiltrated. The ventricular bands, trachea and œsophagus were generally anæmic, but no ulceration was anywhere visible. Tubercle bacilli were found in the sputum. Prof. Bruere, of Bishop's College, kindly examined a piece of the tumour which I sent him, and reported that it was a true papilloma.

Under treatment, cough subsided and bacilli disappeared, with a distinct gain in weight of 10 lbs. in two months. The tumour meantime has steadily grown without causing much increased discomfort; it has a greater thickening at the ary-epiglottic fold on the right side, while two more distinct lobules are in evidence apparently by a con-

striction in the centre of the tumour. The general surface of the larynx is unchanged in colour, while more immobility of the epiglottis is plainly seen. There is no ulceration or increase of dysphagia, and no increased obstruction to respiration.

The improved strength and constitutional gain during the past couple of months were such that patient desired operation to relieve the sensation of a foreign body in his throat. He has been persuaded to go to the country for the summer with nothing but a cleansing spray and constitutional remedies.

My object in bringing this case before the Society is somewhat the same as last, viz., to discuss the advisability of removing such a tumour in the face of a marked tuberculous condition. Suppose the patient to return home distinctly improved in health, and no bacilli to be found, while the tumour continues to grow, or even remains quiescent, with no increased discomfort in swallowing or breathing; would an operation which would take away half the epiglottis be warranted? I am aware that many would decide against operating, but some others may be present who have done such an operation successfully under similar circumstances. I may say that the wound made by excision of the specimen for examination healed perfectly, and that no bacilli were found in the tumour; while the possibility of such a tumour becoming malignant must be considered.

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#### ERRATUM.

The title of the article by Dr. A. Laphorn Smith on page 617 of the August number should read:—Case of Interstitial Tubal Pregnancy, etc.

# RETROSPECT OF CURRENT LITERATURE.

## Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

### Deaths from Malignant Disease.

MASON.—“Some Remarks upon an Analysis of Five Thousand Cases of Death from Malignant Disease.”—*British Medical Journal*, May 18, 1901.

Dr. E. N. Mason, who was one of the committee appointed by the Birmingham and Midland Counties Branch of the British Medical Association to enquire into the influence of locality on the prevalence of malignant disease, gives an interesting account of the analysis of 5,000 deaths due to the various forms of cancer. Of these 5,000 cases, 1,837 were males, 3,018 were females, and in 145 the sex was not stated. These figures show that 62 per cent. of the cases occurred in females, as compared with 38 per cent. in males. If, however, all cases of malignant disease occurring in organs peculiar to either sex be excluded, we find that 53 per cent. of the cases are males and 47 per cent. females. This preponderance of cases among males might be attributed to the fact that men are more liable to causes which are considered as predisposing to cancer than are women, but any such consideration does not explain the fact that the mortality from cancer during the past thirty years has been much more marked among males, amounting as it does to 78 per cent., as compared with an increase in females of 42 per cent., almost double.

While these figures would point to a greatly increased mortality from malignant disease in both sexes, there are facts which go to show that the increase is perhaps more apparent than real. As far as women are concerned, 40 per cent. of deaths due to cancer are found to have been cases in which the disease had its seat in either the uterus or the breast. Such cases were as easily recognized in their advanced stages, thirty years ago, as they are now; but it is not improbable that there were many cases also whose nature was not appreciated.

In the male cases we find that the most marked increase has been due to malignant disease of the stomach and pylorus; in fact these regions are responsible for more than a quarter of the male cases, and it is in just such that increased skill in diagnosis would tend to influence the number of cases which would be certified as cancer.

Another point which would tend to diminish the number of female cases as compared with males, is the great advance made in recent years in the surgical treatment of malignant disease of the uterus and mamma, leading to the saving of many lives which would have been sacrificed thirty years ago.

The analysis of these 5,000 cases shows that malignant disease of the tongue, œsophagus, stomach, jaws, face, mouth, lips, limbs, and bladder, is far more common in men than in women; *e.g.*, stomach and pylorus, 28 per cent. in males, as compared with 11 per cent. in females; bladder, males, 4.25 per cent., females, 0.7 per cent.; œsophagus, males, 5.8 per cent., females, 1 per cent.; tongue, males, 4.4 per cent., females, 0.5 per cent. In disease of the liver and gall-bladder there is less difference between the sexes, males being affected in 16.7 per cent., as compared with 13 per cent. in women.

It is noticeable that if we include disease of the liver most probably secondary to disease in the stomach or intestine, about three-fourths of all cases of cancer in the male occur in some portion of the alimentary tract.

The conclusions of the committee concerning the influence of locality upon the prevalence of malignant disease, based as they are upon the consideration of so large a number of cases, are important, and among others include the following:—

The great difficulty of diagnosis in many cases of cancer makes it probable that the present death rate from cancer is underestimated.

A damp, ill-drained, water-logged soil, of whatever geological formation, is more frequently associated with a high cancer death rate than is a dry, well-drained soil. There is abundant evidence of the existence of groups of houses in which cancer is found with marked frequency; and some evidence which tends to show that second and third cases occur in the same house with greater frequency than can be accounted for by mere coincidence. Cancer occurs more frequently in old than in new houses and districts.

#### **Spinal Anæsthesia.**

ANGUS McLEAN.—“Spinal Anæsthesia.”—*Philadelphia Medical Journal*, July, 1901.

Attention was first called to this method by Dr. Seward Corning who, in 1885, employed it in his experimental work. The method was re-



suscitated by Professor Bier in Germany some two years ago, and he was followed by Professor Tuffier of Paris, who demonstrated its applicability to all operations below the diaphragm. Since August, 1900, it has been widely used in all parts of the United States.

The method of its use consists in the injection into the spinal canal of 1-5 to 1-3 of a grain of cocaine, preferably in a two per cent. solution. The needle is inserted through the lamellar space, between the fourth and fifth lumbar vertebrae. The tip of the spinous process of the fourth lumbar vertebra, which is on a level with the crests of the ilia, is taken as a guide, and the needle is inserted one-third of an inch laterally from the spine, and is directed inwards until it enters the canal. The escape of cerebro-spinal fluid will indicate when the needle has entered the space. During the injection the patient should be in a stooping posture so as to widen the space between the lamellæ.

Sterilization of the cocaine may be affected, by means of a water bath, filtration through a Chamberlain filter, or by dry sterilization in small envelopes, the drug being subsequently dissolved when required in sterilized water. The syringe must be carefully rendered aseptic.

The affects of the injection vary in different patients. Some will succumb to its analgesic effects in eight minutes, while it will require thirty minutes in others. As a rule the analgesia begins in the soles of the feet and extends upwards, even as high as the clavicle. The injection may cause nausea and vomiting, but other patients will show no ill effects. The most constant and annoying distress following the injection is severe headache, usually of the occipito-cervical region. It may last three or four days. This headache may be somewhat relieved by the use of bromide, codeia, hyosine, hydrobromate and nitroglycerine.

Mikulicz has reported forty cases of spinal anæsthesia with satisfactory results. Bier has collected records of 1,200 cases, and points out that the amount of cocaine required in different persons to produce analgesia varies considerably, from one to three centigrammes. He also notes the occurrence of symptoms of cocaine poisoning, such as nausea, dizziness, vomiting, chills, rise of temperature, circulatory disturbances, paresis, and in a few cases, collapse and death.

Dr. McLean has operated by this method twenty-five times. He has found it difficult to select patients who will act favourably under its use, for he has seen the strongest men suffer most severely from its after effects. All his cases made good recoveries.

#### **Report of a Lipoma Removed from the Cheek under Medullary Narcosis.**

MORTON, *Philadelphia Medical Journal*, July 6, 1901.

The patient, a man aged 65, had a large lipoma of the cheek of

twenty-five years standing. Owing to the diseased condition of the heart (aortic insufficiency with dilatation) and chronic nephritis, a general anæsthetic was contra-indicated. The tumour during the past year had caused much trouble from its weight and throbbing, as well as from its appearance.

Half an hour before the cocaine injection the patient received 1-4 grain of morphine and 1-30 grain of strychnine hypodermically. Twenty drops of a two per cent. solution of cocaine were injected into the second lumbar space. Analgesia was complete in the lower extremities in three minutes, in the fingers in ten minutes, over the head in twelve minutes. The patient felt no pain during the operation. Hæmorrhoids were removed by cautery at the same sitting. There was slight nausea but no emesis just before the operation, and the patient did not suffer from shock. At the time of the cocaine injection the pulse was 128, respirations 22; fifteen minutes after the injection the pulse rate was 60 to 64, respirations 24. The patient took some whisky during the operation and expressed himself as feeling well.

*E. J. Semple.*

## Reviews and Notices of Books.

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SAUNDERS' QUESTION-COMPENDS. ESSENTIALS OF DISEASES OF CHILDREN. By WILLIAM M. POWELL, M.D. Third Edition. Thoroughly Revised by ALFRED HAND, Jr., M.D., Dispensary Physician and Pathologist to the Children's Hospital, Philadelphia. Philadelphia and London. W. B. Saunders & Company, 1901. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$1.00.

The quiz on diseases of children has been revised by Dr. Alfred Hand, who, however, has made but little alteration in the contents. A chapter on infant feeding has been added but it fails to give a very clear conception of the subject, and if this is all the student of pediatrics is expected to know concerning the artificial feeding of infants, we pity the infants committed to his care. The part devoted to infectious diseases has been rewritten and forms about the best chapter in the book.

SAUNDERS' QUESTION-COMPENDS. ESSENTIALS OF REFRACTION AND DISEASES OF THE EYE. By EDWARD JACKSON, A.M., M.D., Emeritus Professor of Diseases of the Eye in the Philadelphia Polyclinic. Third Edition, Revised and Enlarged. Philadelphia and London W. B. Saunders & Co., 1901. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$1.00.

In this edition the work has been carefully revised and very much enlarged, and a more symmetrical arrangement made of the contents. A chapter has been added on the tests and requirements of vision for schools, railroads and public services. The book compares favourably with others of the series.

SAUNDERS' MEDICAL POCKET FORMULARY, with an Appendix. By WILLIAM M. POWELL, M.D., Author of "Essentials of Diseases of Children," etc. Sixth Edition. Thoroughly Revised. Philadelphia, W. B. Saunders & Company, 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$2.00.

To this well-known formulary some two hundred valuable additions have been added in the present edition. The book, although of small size convenient for the pocket, contains over 1,800 formulæ as well as much useful information in the form of tables of doses, poisons and their antidotes, obstetrical table, diet list, and what is entitled a "sur-

gical remembrancer," etc., etc. One advantage which it possesses is in crediting the various prescriptions to the source from which they were obtained. The book is bound in leather with a flap and pocket, and contains numerous blank leaves at short intervals in order that additional formulæ may be inserted under the proper alphabetical heading. A thumb index adds to its value for rapid reference.

SAUNDERS' QUESTION-COMPENDS, No. 25. ESSENTIALS OF HISTOLOGY.

By LOUIS LEROY, B.S., M.D., Professor of Histology in Vanderbilt University, etc., etc. Arranged with questions following each chapter. 72 Illustrations. Philadelphia, W. B. Saunders & Company, 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$1.00.

This volume is arranged on a plan somewhat different from that usually followed in this set of compends, and one which we think is a distinct improvement over the older numbers of the series. Instead of having what one might call the catechism arrangement of questions and answers, the book is a short concise treatise on histology, and contains besides at the end of each chapter a number of questions, by attempting to answer which the student can determine whether he has mastered the contents of the chapter. The text is very good, the microscopical structure of the various organs being explained in a clear manner, and the illustrations, which are numerous, consist both of diagrammatic representations of the relation of parts and of drawings from microscopical preparations. The last chapter is descriptive of the technique employed in preparing and mounting specimens.

POINTS OF PRACTICAL INTEREST IN GYNÆCOLOGY. By H. MACNAUGHTON-JONES, M.D., M.Ch., Q.U.I., Master of Obstetrics (Honoris Causa), University of Ireland, etc., etc. Reprinted from the "Edinburgh Medical Journal," 1900. London, Baillière, Tyn-dall, and Cox, 1901.

This is a collection of articles which have previously appeared in the *Edinburgh Medical Journal*, which are here produced in book form. There are seven chapters and an appendix, which contains the reports of a few cases. It is clearly and concisely written and the illustrations are good. While the work may be of some value to the general practitioner, it will be of special interest to the gynæcological surgeon, as containing a résumé of the present views of gynæcologists upon several questions of the day.

F. L.



THE MEDICAL NEWS POCKET FORMULARY FOR 1901. By E. QUIN THORNTON, M.D., Demonstrator in Therapeutics, Pharmacy and Materia Medica in Jefferson Medical College, Philadelphia. Third Edition, Revised and Enlarged. Lea Brothers & Co., Philadelphia and New York.

This edition of Thornton's Pocket Formulary has been brought up to date, if such an expression can be used with regard to prescriptions, by the addition of a number of combinations of the more recently introduced drugs in such a form as will be found useful to those who as yet have not made trial of them. The book also contains the many helps to the physician found in former editions, such as a readily read comparative scale of the metric and ordinary systems of weights, a list of incompatibles, a table of poisons and their antidotes, and an alphabetical list of remedies with their dosage. The diseases are arranged alphabetically with a list of appropriate prescriptions under each disease. The indications for the use of the individual prescriptions are also given, and form a valuable feature of the book.

The volume is bound in good leather with a flap and pocket, and is of convenient size for the pocket.

DISEASES OF WOMEN. By H. J. GARRIGUES, M.D., Third Edition Revised. 367 Illustrations. W. B. Saunders & Company, Philadelphia and New York. Canadian Agents, J. A. Carveth & Co., Toronto.

The esteem in which the second edition of this book is held by the general medical reader is proved by the exhaustion of it in the short space of two years. This last edition, the third, has been thoroughly revised and brought up to date by the author. While, perhaps, there is more anatomy than is actually necessary for the undergraduate, this will be of use to the general practitioner, who may wish to brush up his knowledge of this subject. This part is followed by most excellent chapters on etiology in general, and upon the modes of examining patients, the instruments and different positions being clearly described and illustrated. The different gynecological diseases are taken up in detail and handled in a masterly manner.

The teaching throughout is sound and, taking it as a whole, the book is to be highly recommended.

*F. L.*

## **Society Proceedings.**

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### **CANADIAN MEDICAL ASSOCIATION.**

The thirty-fourth annual meeting of the Canadian Medical Association opened at Winnipeg, Manitoba, on the morning of the 28th of August, and continued for the two following days. There were in attendance over 175 members from all parts of the Dominion, the second largest gathering in the history of the Association; and the meeting itself has been pronounced the most successful of any yet held under the auspices of this Association. There were several visiting doctors from the United States.

Dr. H. H. Chown, of Winnipeg, the President, occupied the chair, while Dr. F. N. C. Starr, of Toronto, discharged the duties of secretary.

In the absence of Chief Justice Killam, Dr. J. H. O'Donnell, one of the oldest practitioners in the West, delivered the address of welcome. He referred to the conditions present in 1869, when Winnipeg was an outpost of civilization, and gave interesting references to Drs. Cowan, Curtis J. Bird, Beddom and Bund, who was already in the West when Dr. O'Donnell moved there in 1869. His address was very much appreciated by the members of the Association.

Dr. R. W. POWELL, of Ottawa, the past-President of the Association, then introduced Dr. H. H. Chown, the President-elect, to the Association.

Dr. CHOWN, on rising to reply, was received with hearty cheers, testifying to the high esteem in which he is held by his fellow-practitioners throughout the Dominion. He briefly thanked the Association for the honour they had conferred upon him at the meeting in Ottawa one year ago.

Dr. STARR, the Secretary, presented his annual report. It referred to the meeting at Ottawa last year, to the attendance of 153 members, which was an increase over former meetings in that city, to Dominion Registration and to the formation of a Physicians' Protective Association.

Dr. Edebohls, of New York, and Dr. Sutton, of Pittsburg, were welcomed to the meeting, and requested to participate in the discussions.

#### **The Question of Medical Defence.**

This was introduced by Dr. RUSSELL THOMAS, of Lennoxville, Que., who had been delegated by the St. Francis District Association, to pre-

sent this subject to the Canadian Medical Association. He made a strong plea for the formation of a Medical Defence Union and thought that all were agreed of the necessity for such. He supported his contentions by citing two or three cases already well known to medical practitioners in Canada, and after showing that such defence unions were a success in England, he concluded by outlining the plan of medical defence already in vogue and supported by the St. Francis District Medical Association which he was authorized and prepared to hand over entire to the Canadian Medical Association. The discussion of this important matter was deferred until later on in the session.

**Address in Medicine, "The Question of Medical Education."**

DR. J. R. JONES, of Winnipeg, delivered this address. See page 664 of the present number.

**Dominion Registration.**

DR. T. G. RODDICK, of Montreal, who had so long and so ably advocated this much-to-be-desired measure, delivered a stirring address on the subject, ably reviewing the subject of inter-provincial registration from the time of its inception to the introduction of his bill at the last session of the House of Commons. The special committee appointed on this subject had not yet reported, so the discussion was postponed until the committee had a chance to meet and report later on in the session. Dr. Roddick now seems to hold to the opinion that the suggestion of Dr. Britton, of Toronto, that representation by population, for Ontario at least, would be advisable.

**Infectious Pneumonia.**

DR. W. S. MUIR, Truro, Nova Scotia, read this paper. See page 694.

*First Day—Afternoon Session.*

**President's Address.**

DR. CHOWN then delivered his address. See page 657.

SIR JAMES GRANT, of Ottawa, moved a vote of thanks to the President, and characterized the address as extremely interesting and instructive. DR. J. L. BRAY, of Chatham, seconded the motion.

**Epidemic of Spinal Meningitis.**

DR. JAMES MCKENTY, Gretna, Manitoba, presented this paper, which gave an account of an epidemic occurring in North Dakota during the winter and spring of 1893. It occurred within an area extending fifty miles from east to west and twenty miles from north to south, and was comparatively definitely limited. About seventy persons were seriously ill and almost as many others suffered from mild manifestations of the disease. Of the seventy cases, twenty-five ended fatally, a mortality of

about 35 per cent. In the practice of Dr. McKenty there occurred some thirty cases, a brief record of twenty-two of these being kept. The average age was seventeen years; the youngest fifteen months; the oldest thirty-eight years. The duration of the disease extended from twelve hours to fifteen weeks. No post-mortem was made in any case. Dr. McKenty then described in detail the clinical aspects of several cases.

### **Splenic Anæmia, with Case.**

DR. A. J. MACDONNELL, Winnipeg, contributed this paper with the history of the case. This was an exceedingly rare disease. In 1898 the number of cases recorded did not exceed thirty, but since that time there has been fifty additional cases reported. R. N., aged 27 years; environment good; has never had malaria; habits and mode of life good; positively never had syphilis. The present illness began in August, 1899. Felt heavy on the right side with a feeling of fullness and weight. In January, 1900, gave up work on account of muscular weakness. There was no vomiting. The patient consulted Dr. Macdonnell in March, 1900, walking into his office with considerable difficulty. There was no enlargement of lymphatic glands. Enlargement of the stomach could never be percussed or palpated. Liver dulness was practically normal. There was no jaundice or pain in the liver region. The patient succumbed to the disease, but no post-mortem was held. Another case occurring in a patient aged seventeen was reported. Dr. Bell made a blood-count in this case which at different times ranged 3,540,000, then 3,600,000, then 3,400,000, with 7,602 white-blood cells. In this case all the other organs were normal, and there seems to be no pre-disposing cause in this case. Dr. Macdonnell stated that only ten autopsies had been made on people dying from the disease. He referred to the conditions found post-mortem in these cases. The treatment was stated to be rest, diet, and vigorous doses of arsenic. The mortality is set down at 20 per cent. As far as operation is concerned, physicians will not be satisfied until it is clear that the patient recovers from the operation as well as from the disease. If we are sure of our diagnosis, then surgical intervention is deemed advisable.

### **Physical Development.**

DR. J. N. HUTCHISON, of Winnipeg, read a carefully prepared paper on "Physical Development." The paper did not deal with anything new, but called attention to and emphasized certain facts of considerable importance. He considered that children were sent to school at too early an age, and as a result there was danger of brain over-work. He insisted upon the necessity of having healthy parents, and deplored the system of education which developed the mind at the expense of the



body. He was an advocate of periodical lectures by duly qualified physicians to separate classes of boys and girls on the subject of sex; but the primary responsibility in this matter, he placed upon the parents. There would be real progress in the prevention of tuberculosis when people the subject of the disease recognize that they should not marry. The paper, which was listened to with close attention, closed with a reference to the problems of those unfortunates who are neither mentally nor physically qualified for the duties of life.

#### **Report of Cases Treated with Super-Heated Dry Air.**

DR. W. H. PEPLER, of Toronto, introduced this subject in a paper which cited his experience and observations in the treatment of certain cases by this plan or process. He briefly described the apparatus and the method of treatment. It only takes twenty minutes to reach a heat of 300 degrees F. The average duration of the application of the heat is forty-five minutes. The physiological and therapeutical effects noticed were referred to, as dilation of blood-vessels, etc. He administers the treatment one hour after meal time with due regard that there shall be as little as possible excitement and exertion. He has not seen any ill-effects from the treatment. He first gave notes of the case of a patient, a man aged thirty-five years, who had suffered for some time from varicose ulcer of the right leg, with considerable pain. This patient had a treatment of 35 minutes' duration and was able to walk home with very little discomfort. After three times, in ten days, the ulcer was very much reduced in size. The second case was a patient twenty-two years of age who had been troubled with rheumatism for two years. A temperature of 320 degrees was employed with good satisfaction. Several other cases of rheumatism and eczema were reported. The treatment in each case proved highly satisfactory, patients never complaining of any discomforts and all expressing satisfaction with the treatment. Dr. Pepler subjects a considerable portion of the patient's body from a temperature of 280 to 320 degrees F. The results are often not apparent for some time after treatment.

DR. MCADAM, of Battleford, asked Dr. Pepler if he had ever tried the treatment with high temperature, where he had any doubts of the condition of the heart.

DR. MACDONALD, of Brandon, referred to a case which had come under his observation in which there was heart trouble. Perspiration occurred freely but with no effect in a depressing way upon the circulation. Treatment in this case was continued for two weeks, but he had never determined that there had been any effect upon the heart, although there was a small heart-lesion at the time.

DR. PEPLER, in reply, could not speak personally as to any deleterious

results from weak heart. Of course, there were many cases reported where heart trouble was present. He personally had never noticed any heart or head symptoms in his cases. He thought with care there would be no bad results.

**Orthopedic Treatment of Deformities and Disabilities Resulting from Diseases of the Nervous System, with Special Reference to Tendon Transposition.**

With special reference to tendon transposition, DR. B. E. McKENZIE, of Toronto, spoke of disabilities and deformities resulting from paralysis, some of which were commonly regarded as hopeless; but the conditions of a great majority of them were remediable and should receive a considerable amount of attention. He was at some pains to explain the respective motion of joints, particularly the ankle joint and knee joint, especially calling attention to the normal conditions of equilibrium, and then showed how the muscles of some of the groups at times became paralyzed and the balance and equilibrium thereby destroyed. Mechanical treatment was often necessary and often efficacious as well; massage and electricity had their respective places, but he made particular reference to the method of treatment that had been in vogue for twenty years, and had been introduced on this continent by Dr. Parish, of Philadelphia. He went carefully into an explanation as to how muscles can be transferred from their usual point of action and then he gave an account of several cases in which he had successfully accomplished this. In his opinion amputation of a limb because of apparent disability should seldom or never be resorted to.

In answer to Dr. McAdam, Dr. McKenzie disapproved of jackets in treatment of curvature of the spine.

DR. CLARENCE STARR, of Toronto, stated that the subject was of great interest to him, as he was interested pretty largely upon the same lines of surgery. Mr. McKenzie had indicated a large number of cases of paralysis which could be wonderfully helped by operative procedures. Dr. Starr thought that Dr. Bowlby, of Boston, deserved a great deal of credit for the work he has performed in this connection.

DR. H. B. SMALL of Ottawa, referred to a case Dr. McKenzie had operated on. In this case, previous to operation, the boy had great difficulty in arising from the sitting posture, and when walking he had had to rest every few yards. After the operation he was very much improved, and when Dr. Small last saw him about a week ago, he could walk very easily, and never had to support himself. The improvement during the last four or five weeks especially was very marked.

*Second Day—Morning Session.***Mild Smallpox.**

DR. G. A. KENNEDY, McLeod, Alberta, presented this paper. It dealt with the recent outbreak of the disease in the North-West Territory, an outbreak which was wide-spread and which had existed for some time before its true nature was recognized. Dr. Patterson, Quarantine Officer for the Dominion Government, was satisfied that there had been 1,500 cases. A noteworthy fact was that the greatest number of cases occurred among the French Half-breeds, who had never been vaccinated, and, further, Indians on reserves had not suffered to any great extent, as annual vaccination is the rule. Not one case was seen or heard of among Galicians, Doukhobors or Roumanians, which was due to the fact that compulsory vaccination was the rule in youth, and then they had been re-vaccinated on their recent passage across the Atlantic and at Halifax. Fifty per cent. of all cases were extremely mild in character; forty per cent. were cases of typical varioloid; ten per cent. were severe, almost confluent. The mortality was slight, only thirteen deaths occurring; and the disease prevailed fully as much amongst adults as amongst children.

DR. MUIR, Truro, Nova Scotia, discussed the merits of the different vaccines on the market, and the paper was further discussed by DR. MACDONALD, of Brandon; DR. INGLIS, of Winnipeg; DR. D. H. WILSON, of Vancouver; and DR. MONTIZAMBERT, of Ottawa. The latter considered it would be unfortunate if the impression went abroad that any doubt existed in the minds of the members of the Canadian Medical Association as to the true nature of the disease which had been epidemic for some years. He considered the facts presented in Dr. Kennedy's paper relating to Doukhobors and Galicians were perhaps the most valuable portion of it.

At the close of this discussion the following resolution was moved by DR. R. S. THORNTON, seconded by DR. J. L. BRAY, and unanimously adopted:—"Resolved, that in view of the general prevalence of smallpox throughout the continent, this Association desires to urge upon the profession and the public generally the necessity of vaccination and re-vaccination."

**Chronic Ulceration of the Stomach, Simulating Cancerous Disease, Relation of a Case of Gastro-enterostomy with  
Murphy Button, Recovery.**

DR. J. F. W. ROSS, Toronto. This case occurred in a woman twenty years of age, the condition of whose stomach had been bad for three years. She was a nurse in the Training School of a Hospital, and her gastric conditions grew gradually worse and worse. Dr. Ross was asked to see the patient by Dr. E. B. O'Reilly, Hamilton, in December, 1899.



He found the patient emaciated with the opium habit already formed. In January, 1900, he again saw her with Dr. Griffin, of Hamilton. At this time rectal alimentation was being persevered in with considerable benefit. In March, 1900, she was discharged from the hospital and remained well for two weeks. As soon as food passed into the stomach great rigidity of the right rectus muscle was noted. When the patient came under Dr. Ross' attention she weighed 75 lbs. As malignant disease of the stomach is rare at this age of life, it was difficult to diagnose the tumor as such, and the symptoms pointed to the pyloric end of the stomach. It was not possible to say whether cancerous or not. The symptoms pointed to the presence of ulcer, but the thickening easily made out lead to the belief that malignant disease had been grafted on to the ulceration. Some dilatation also could be made out, but the rhythmic muscle waves so characteristic of pyloric obstruction could not be found; but a large growth was found at the pyloric end. The case was looked upon as hopeless, and decision was arrived at not to remove the growth but to give temporary relief by gastro-enterostomy. This was done and the patient made an uninterrupted convalescence. Eleven months after the operation the patient weighed 140 lbs. and looked the picture of health. On examination of the abdomen no mass could be felt, and the patient was not suffering from any gastric symptoms at all. Dr. Ross then went into the literature on the subject, quoting Fagge, Sydney Martin, Moynihan and Mayo Robson.

DR. LAPHORN SMITH, Montreal, began the discussion, stating that the case was especially interesting to him, but rather from the general practitioner's point of view. He believed that no case of cancer of the stomach ever begins as cancer of the stomach. First there was some sort of irritation of the mucous membrane. This irritation finally becomes a chronic ulcer and upon this the germ of cancer was engrafted, or whatever it was which is the essential constituent of the cancerous process.

DR. MARTIN, Montreal, discussed the importance of the examination of the stomach contents in these cases.

DR. BRUCE, Toronto, stated that he had an experience with a case a year ago which corresponded closely to the one Dr. Ross had reported. His patient was thirty-eight years old.

DR. GILBERT GORDON, of Toronto, thought that we should look at these cases from the standpoint of the physician as well as from the standpoint of the surgeon.

DR. HOWITT, Guelph, stated that the second case of ulceration of the stomach upon which he operated was one of acute perforation.

DR. ROSS thanked them for the reception they had given his paper.



### **Some Forms of Hyperacidity and their Treatment.**

DR. C. F. MARTIN, of Montreal, presented notes of some facts deduced from the results of systematic examination of the gastric contents. The unfortunate general employment of the term dyspepsia was responsible for the disregard of this condition. In the case of organic disease producing excessive secretion, the diagnosis was often difficult. He gave the history of two cases in illustration, the second being an individual forty-five years of age, who gave the unusual history of having been ill for six months. There was no obstruction of the pylorus, but simple dilatation of the stomach. He also referred to the medical treatment following gastro-enterostomy.

DR. MACDONNELL, of Winnipeg, discussed this paper.

### **Medical Defence.**

The report of the committee on Medical Defence was here presented by W. S. Muir, of Truro, N.S. It reported favorably on the formation of a Medical Union, and the organization thereof was immediately perfected. It will be known as the Medical Protective Association, will be incorporated, and will have for its object the protection of the character and interests of medical practitioners in Canada. It will further promote honourable practice, will aid in suppressing or prosecuting unauthorized practitioners and will seek to advise and defend, or assist in defending, members in cases where proceedings involving questions of professional principle or otherwise are brought against them, and other like matters. Dr. R. W. Powell, of Ottawa, was elected President; Dr. McKinnon, of Ottawa, Secretary; and Dr. James Grant, Jr., of Ottawa, Treasurer. .

### **Report of Committee on Dominion Registration.**

It is proposed to secure an amendment to the B. N. A. Act, or, to take advantage of section 91 of that Act, and under it obtain legislation from the Dominion Parliament, by which the profession in Canada might form a Dominion Council and which could be supplemented by legislation by the various provinces recognizing any certificate of standing issued by the Dominion Council as entitling a holder to practise in such provinces. Dr. Muir approved of Dominion Registration and spoke for the Province of Nova Scotia. Dr. Jones voiced the sentiments of the profession for Manitoba. Drs. A. A. Macdonald and J. L. Bray, endorsed the scheme for Ontario. Dr. Russell Thomas spoke for Quebec. Dr. Christie said that New Brunswick was in favor of Dominion Registration. Dr. Lafferty said the Northwest Territories were favorable.

*Second Day—Evening Session.***Cancer of the Uterus, with Lantern Demonstrations.**

This was a very interesting and profitable demonstration conducted by DR. THOS. S. CULLEN. In introducing Dr. Cullen, DR. CHOWN spoke of him as a young Canadian who had gone wrong in having removed to the United States and having never returned. Dr. Chown considered that the experimental work pursued by Dr. Cullen, if done in Canada, would meet with as signal success as that which attended his labours in the United States. For over an hour Dr. Cullen was engaged in showing a large number of excellent lime-light views, the results of microscopic examination of tissues, each view being lucidly explained by the demonstrator. At the close of his excellent demonstration, Dr. Cullen was accorded a hearty and unanimous vote of thanks, moved by DR. ECCLES, of London, and seconded by DR. GRAY of Winnipeg, and carried amid great applause.

**Skin Diseases, with Lantern Demonstrations.**

This was another valuable demonstration and was conducted by DR. FRANCIS J. SHEPHERD, of Montreal. He first exhibited cases of Blastomycetic Dermatitis and further spoke of a few cases which he had seen of this disease. Views were also given of cases after treatment with iodide of potash. Some interesting views were those caused by drug eruptions, of which he showed two or three due to salicylate of soda. In one of these Dr. Shepherd said that the lesions first came out with large welts like urticaria. This is rather a rare form of drug eruption. It appeared after two doses of ten grains each of the drug. One case almost died of acute laryngitis from the eruption in the throat. Amongst other views shown were papular purpuras, which are generally associated with rheumatic attacks, psoriasis of the nails, X-ray burns as the result of one application, and most interesting were cases of smallpox, one showing pustules upon the palm of the hand, particularly interesting, as in adults you never see chickenpox upon the palm of the hand, but you invariably do in smallpox. Views of feigned eruptions were also shown. This demonstration proved so interesting to the members, that Dr. Shepherd was frequently called upon to give more.

**The Varieties and Distribution of Bacilli Diphtheriæ and their Clinical Significance.**

DR. F. F. WESTBROOK, of the University of Minnesota, presented a paper on this subject, primarily from the laboratory point of view. He exhibited a carefully prepared chart showing in tabulated form the results of numerous examinations in schools, and stated the conclusions which he deduced from these facts. Formerly, it was believed that

the bacillus remained localized at its point of entrance, but within recent years, however, careful observations have showed that the toxins had been distributed throughout the body and the bacillus itself found in organs far removed from the atrium. From evidences of 230 cases of diphtheria at autopsy, observers had called attention to the frequency with which the bacillus of diphtheria was found in the organs of the body. The bacillus and its toxine have been shown to be capable of producing lesions which differ greatly from each other, as in ulcerative endocarditis, meningitis, etc. In summarizing, Dr. Westbrook said where each school was reported and where great care was taken in the isolation of clinical cases with typical form, the percentage was very small.

### **Removal of Hairy Tumor from the Stomach Weighing 23 Ounces—Specimen—Recovery.**

DR. H. A. BRUCE, Toronto. The subject of the case was a woman aged 26, who had been married six years and had two children. A lump was noticed in the abdomen two months previous to the birth of the last child. Patient had no symptoms. The lump was about five inches in width and it could be lifted forwards. It reached to within three inches below the umbilicus. It gave the patient no special discomfort, there being absolutely no symptoms present. Dr. Bruce advised exploratory incision. This was done on July the 22nd last at St. John's Hospital, Toronto. On opening the abdomen in the middle line the spleen and kidneys were found in a normal condition, but there was a large mass in the neighborhood of the stomach. The surgeon could make out the mass lying free in the stomach, a portion extending through the pyloric end of the stomach. An incision was made into the stomach and the mass removed. After removing the mass of hair, the opening of the stomach was closed in the usual way. Hot solution was given for two hours and nutrient enemata for six hours. Twenty-three hours after the operation sips of hot water were given by the mouth. Forty-eight hours after operation patient was given one-half an ounce of milk and lime water every hour. She left the hospital on the twentieth day. The tumor was entirely of hair exactly the same color throughout and the same color as the hair on her head. It was 24 inches in length, being about 2 inches in diameter at one end and gradually tapering to a point at the other. Dr. Bruce considered this case rare, but offered no solution as to how the hair got into the stomach. There were no evidences of hysteria present in the patient. There are some specimens of hairy tumors in the McGill Museum at Montreal.

*Third Day—Morning Session.***A Case of Transplantation of the Ureter for Cure of Uretero-Vaginal Fistula.**

DR. A. LAPHORN SMITH, Montreal. This occurred in a married woman thirty-four years of age, who came to Dr. Smith on the 1st of July, 1901. During parturition forceps were employed, and the vagina lacerated, and ever since there has been a constant flow of urine by the vagina. Operations for her relief had been performed in England, without success. Dr. Smith had seen Sanger perform an operation of this character in Leipsic when he was there three years ago, namely, to open the peritoneum running over the large vessels at the brim of the pelvis and to feel for the artery, see the vein and pick up the third tube which was the ureter. The operation was done in the highest Trendelenburg posture. A very small incision was made in the peritoneum lining the pelvis in the line of the ureter, a silk ligature was passed around it, and then the ureter was severed a little above the ligature. The end of the ureter was split open to a distance of a third of an inch. A slit was then made obliquely into the right upper corner of the bladder and the ureter stitched into it, the mucous membrane of the ureter being joined to the mucous membrane of the bladder with very fine chromicised catgut. This is the first time this operation has been done in Canada, and Dr. Smith stated that not a drop of urine had passed through the fistula since.

**Syphilis as seen by the Ophthalmic Surgeon.**

DR. F. BULLER, Montreal. See page 699.

**The Present Outbreak of Smallpox in America.**

This subject was presented by DR. H. M. BRACKEN, Health Officer, Minnesota. He outlined the origin and traced the course of many outbreaks in various parts of the State of Minnesota. The case of a porter on the Great Northern Railway, who arrived in St. Paul in March, 1899, was mentioned as the source of the outbreak. He was supposed to have contracted the disease in Seattle, and when told that he had smallpox, he said that if so there was plenty of the same disease where he came from. Other epidemics were spoken of in various parts of Minnesota with a total of 9,429 cases, and the disease has still many centres in that State. It is impossible to locate positively the source of the wide-spread epidemic farther than that it spread from the southern and south-western States into North Dakota, Minnesota, Nebraska, Montana and Texas. Dr. Bracken showed that returning soldiers from the Philippines were not responsible for its introduction. He sug-



gested that it was probably imported into the United States by Cuban refugees before war broke out between that country and Spain.

An interesting discussion took place on this paper. DR. RUSSELL THOMAS wanted to know where the best vaccine was manufactured, a product that could be relied upon.

DR. INGLIS, formerly Medical Health Officer, Winnipeg, related his experience in the schools of Winnipeg and spoke of some of the bad results resulting through impure vaccine.

DR. BRACKEN, in reply: Vaccine was frequently spoilt by not being kept in proper temperatures, as it was frequently being shipped in cans, which were too hot, and subsequently kept in warm offices. The Health Commissioner of Minneapolis kept all his vaccine in an ice-box, but, of course, not frozen, and had obtained good results. Replying to a question in regard to isolation, Dr. Bracken favored eighteen days' quarantine.

#### **The Necessity of Recognition and Isolation of Trachomatous Patients in Canada.**

In the absence of DR. W. GORDON M. BYERS, Montreal, Dr. C. F. Martin, of the same city, read this paper. The paper recited the history of a young girl from Glengary County, Ontario, who came to the clinic at the Royal Victoria Hospital, Montreal, with a most intense condition of granular lids. She had been unable to open her eyes properly for months past, and her vision was reduced to the counting of fingers. The seriousness of her disease had not been recognized at home, as she mixed freely with other members of the community. Another case was referred to in the County of Leeds, and in this case as well no precautions had ever been taken to prevent the spread of the disease. Dr. Byers believes that there are many unrecognized and untreated cases scattered here and there throughout the Dominion. The disease is said to be prevalent in districts of Manitoba and certain centres in the eastern counties of Ontario and others in Quebec. The trachoma problem has had to be faced by one Government in Europe, and the matter has been brought to the attention of the Dominion Government, which has not yet taken any action in the matter. Dr. Montizambert stated that the question of exclusion of trachomatous immigrants had been under consideration by the Government for some time. He considered these people somewhat undesirable immigrants.

#### **A Few Notes on the Treatment of Typhoid Fever.**

DR. J. L. BRAY, of Chatham, discussed this subject under medicinal, dietetic and hygienic headings. The first he thought might be eliminated except in cases where complications arise, and he thought a certain amount of medicinal treatment useful during the initiatory stages.

He was in the habit of employing calomel. Tympanites could be avoided to a great extent by a proper diet. In feeding, now, he gives very little milk, but that little always peptonized. He believes in making the patient drink two or three quarts of pure water in the twenty-four hours. Albumen water with sugar may be given from the first, after the first two weeks he gives liquid peptonoids, or some of the numerous preparations of beef, jellies, mutton broth or a soft-boiled egg.

As regards the hygienic treatment, the bedding and the night clothes should be changed daily. The room should be kept thoroughly ventilated, admitting plenty of fresh air and sunshine. The patient should be sponged frequently with tepid water, just as good results resulting from tepid water as from sponging with very cold water or the cold bath, and it was not so distasteful to most patients. In hospital practice, Dr. Bray used the electric fan after using the tepid water. He has found this plan very satisfactory, especially in young and sensitive children.

DR. RUSSELL THOMAS discussed the paper, and said that he had found the ice-cap beneficial, that it did not disturb the patient and had a decided effect in reducing the temperature.

#### *Third Day—Afternoon Session.*

##### **The Address in Surgery.**

This was delivered by DR. O. M. JONES, Victoria, B.C., and it proved a very able and masterful effort. See page 676.

DR. F. J. SHEPHERD, of Montreal, proposed a vote of thanks, DR. A. A. MACDONALD, of Toronto, seconded this; SIR JAMES GRANT, of Ottawa, supported the motion, which was unanimously passed by the Association.

##### **A Surgical Procedure for the Relief of Ovarian-Tension Pain.**

DR. HENRY HOWITT, Guelph, Ont., read this paper, opening with the question: Is not pain, frequently, if not usually, caused by tension on some nerve filament? In Dr. Howitt's opinion, the answer should be in the affirmative. The operation Dr. Howitt employs is quite simple. The ovary is exposed and then a number of cross-sections are quickly made through the tense capsule in such a manner as to divide it. Then the large Graafian follicles are opened. They are merely touched with carbolic acid. If the capsule is thickened a portion should be removed. Hæmorrhage has never been troublesome. Adhesions give rise to no complications. Dr. Howitt recited the histories of two or three cases in support of the operation.

DR. LAPHORN SMITH stated that he had never heard of this operation before, and considered that it was original with Dr. Howitt.

**Symposium on Tuberculosis.**

PROF. RUSSELL, of the University of Wisconsin, introduced this subject in a careful yet exhaustive paper on human and bovine tuberculosis and their inter-relation. The importance of any phase of investigation relating to tuberculosis and its relation to milk is unquestioned, in these latter days when the general public is beginning to appreciate, for the first time, the magnitude of the problem that confronts them in attempting to lessen the ravages of the "great white scourge" of the human race.

In considering this subject it may be reached from two points of view:—

1. From the standpoint of animal industry.
2. From that of public health.

The rapid extension of the disease amongst cattle within the last few decades has forced upon breeders and dairymen the necessity of considering this subject whether they desire it or not. It is customary in many quarters, even yet, to decry all consideration of this matter as unnecessary, inexpedient, and harmful to the dairy interests. But as is too frequently the case, the motive for such action rests upon a financial foundation, and many breeders are averse to a calm, judicious discussion of the matter simply because it may mean financial loss to them.

Since the introduction of the tuberculin test as an aid in the diagnosis of the disease in cattle, it has been positively determined that the malady, at least in its incipient form, is very much wider spread than was formerly supposed, but it by no means follows that all animals that react to the tuberculin tests are actually in a condition in which they or their products are dangerous to man and beast.

The slow insidious nature of the disease that characterizes it in the human is also to be found in the cattle, and not infrequently an animal may be infected with the seeds of the disease for a considerable time—even a year or so—without showing in any degree physical symptoms that are manifest to even the animal expert. Such animals are not diseased in the ordinary meaning of the term, *i.e.*, they are not capable of transmitting the disease, either directly or indirectly, through their milk or meat. The affection in such cases is latent, generally confined to various lymphatic glands: but animals so affected are, however, potentially dangerous for the latency of the disease may be overcome through the operation of various factors, and the chronic type may thus be awakened into an acute phase. It is in this way that the disease spreads slowly and unperceived through a herd. Before it has made such inroads as to cause actual death of any considerable number of animals, many more have acquired the trouble, at least in the earlier phases.

Necessity of controlling its spread and eradicating it is evident for the sake of the herd itself, if from no other point of view. Successful animal industry, especially with cattle, requires that the herd shall be kept free from all taint of this disease. As to treating milk, Prof. Russell said pasteurization and sterilization were the two best forms of applying heat to destroy the organism. He recommended the rotatory pasteurizing machine, one of which has been used in Winnipeg for some years, as the best method of removing organisms from milk.

DR. GOOD, of Winnipeg, in discussing the paper, said that it afforded him some relief to learn that milk is not so dangerous after all. He stated that he had been avoiding milk and all organic fluids for the past year or two, but he was glad to know that he could now go back to its use with the same freedom as in his younger days. He then moved a vote of thanks to Prof. Russell, seconded by Dr. McArthur, which was unanimously adopted.

DR. A. J. RICHER, of Montreal, contributed the next paper on the "Sanatorium Treatment of Tuberculosis." This treatment had been introduced by Dr. Trudeau in America under great difficulties, and at the present time this distinguished scientist was able to house and treat over one hundred individuals in his institution. According to Dr. Richer, the treatment is made up of rest, outdoor life, over-feeding and medical supervision. The latter was described as the key-note to success in phthisical treatment. Over-feeding was also emphasized.

The last paper was contributed by DR. GILBERT GORDON, of Toronto, and it referred to the etiology and the early diagnosis of pulmonary tuberculosis. He spoke of the early stages of the disease, and thought that we ought to be able to diagnose it before the appearance of the bacilli in the sputum. Direct inheritance he considers very rare. The inhalation of dried sputum is the most direct cause. Dr. Gordon considered that we are woefully behind in Canada in fighting this plague, and more money should be spent by Governments and philanthropic individuals. He went carefully into the symptoms of the pre-tuberculous stage, and considered that a persistent cough was a very dangerous symptom.

Another important discussion took place upon this topic. Dr. Lafferty warned the profession in Ontario against sending advanced cases to the North-West Territory. Dr. Barrick, of Toronto, pointed out that Ontario was leading in regard to the treatment of tuberculosis, and he hoped to see the Sanitarium brought with a wide open door to all conditions of life. Dr. Brett, of Banff, suggested that the Association should pass a resolution pointing out to the Parliament of Canada the necessity of providing for the establishment of sanatoria for the benefit of the community.



**Officers for 1902.**

The report of the Nominating Committee was presented by Dr. W. S. Muir, Truro, N.S., who expressed regret at having to accept the resignation of their General Secretary, Dr. F. N. G. Starr. Montreal was selected as the place of meeting in 1902, and a suggestion was left with the members of the Association that they meet in British Columbia the following year.

These officers were elected for the ensuing year:—

President—F. J. Shepherd, Montreal.

Vice-Presidents:

Prince Edward Island—S. R. Jenkins, Charlottetown.

Nova Scotia—T. F. Macdonald, Hopewell.

New Brunswick—Dr. Christie, St. John.

Quebec—J. Alex. Hutchison, Montreal.

Ontario—Bruce L. Riordon, Toronto.

Manitoba—A. J. Macdonnell, Winnipeg.

North-West Territories—H. G. McKid, Calgary.

British Columbia—J. M. Lefevre, Vancouver.

T H E

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

EDITED BY

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## ON MEDICAL EDUCATION.

There is very much in the address in medicine delivered by Dr. Jones, of Winnipeg, before the Canadian Medical Association, with which we find ourselves in hearty agreement. He has, we think, recognized and indicated what we believe to be the great weakness of our system, namely, the lack of adequate preliminary education. Not merely in Canada, but throughout North America, judging from the students who come to us from all quarters, the school education is such that the ordinary medical student is unable to write even passable English. Whereby we mean, not so much that he is unable to spell or to form his letters correctly (though this is often the case), but that his instruction has been such that he is unable to express himself in clear language, or in other words, shows by his writings that while he may have been taught facts he has not been taught to express himself, and obviously has not been taught to think. That is the great weakness, we firmly believe, of our preliminary education, a weakness which tells throughout a man's life, and

though it is the custom to depreciate the education received by our French compatriots, we are forced to confess that in this respect the education received in the better class French schools throughout the Province, is better than that obtained by our English-speaking youth.

Acknowledging this, we must candidly confess that we entirely disagree with Dr. Jones that the preliminary examination should be left by the proposed Medical Council in the hands of the various universities and Provincial examining bodies. If this be done we shall be practically powerless to demand a better standard and better course of studies. Upon the other hand, if the Central Medical Council be given authority to make its own standard, then the schools throughout the Dominion will be given a level to which they must attain in order that their pupils may be found worthy of being admitted to work for the higher medical qualification, and we must safely expect in Canada the same result as that which followed the establishment throughout Great Britain of the local examinations of the Conjoint Board of Oxford and Cambridge. The effect of those local examinations upon the higher education in England has been very remarkable. It has improved the teaching throughout the land and we may expect the same to occur here in Canada. No individual university can effect the same advance.

We agree with Dr. Jones in what he has to say with regard to the value, not so much of a classical education, as generally understood, but of a competent knowledge of Latin and Greek along with a good knowledge of English. We believe that a sound training in Latin is an admirable means of education—of “drawing out” the thought and the intelligence of a young student. As for Greek, we would not demand quite the same course of training, but we firmly believe that it is essential that a medical student should possess such a knowledge of Greek that he is able to understand and to appreciate the mode of formation and meaning of the great number of scientific terms of Greek origin with which he has perforce to become familiar. It is our experience that our Canadian medical students work far harder than do, for example, English medical students, but a painfully large proportion of the time expended by them is expended in memorizing medical terms which did they know Greek roots would explain themselves and would immediately and without difficulty become committed to memory. For it is a well understood fact that words or facts which are isolated and have no associated ideas, are those which try the memory; the greater the number of associated ideas there are, the greater the ease with which a word or fact is remembered.

With regard to the conduct of the medical curriculum, we also find ourselves very largely in sympathy with the lecturer. We concede the

time has come for reducing the number of didactic lectures in most of the subjects of the curriculum, and with Dr. Jones we agree also that the best training for the future practitioner is a thorough bedside study of individual cases, this being superior to the Harvard plan, which he briefly describes. Nevertheless, we would here proceed somewhat cautiously ; there is too great a tendency for us to follow fashion in these matters, and if one school establishes a given mode of teaching, the tendency is for all the others to follow without due consideration. Rather, we would urge, that in teaching everything depends primarily upon the teacher. We can each of us recall in our student career, certain courses of didactic lectures which have had a permanent influence upon the teacher. We can each of us recall in our student career, cements by the spoken word, by no means do away with his course of lectures. We agree, however, where the facts to be taught are largely routine and are to be found stated clearly in the text-books, there much more good would be done by replacing the course of lectures by demonstrations and grinds or " quizzes " to sections of a class by the professor and demonstrators.

There are yet other matters in which we should like to enter more fully, but from its importance we would now turn to Professor Jones' attitude towards the proposed Dominion Medical Bill. This attitude at the present moment is, we confess, rather curious and disappointing. Evidently Dr. Jones is strongly in favour of the establishment of the Dominion Board, but, at the same time, his criticism would indicate that he would oppose the present scheme. Now we ourselves do not think, we do not expect, that our Colleague Dr. Roddick's scheme is perfect ; rather we look upon this as a beginning. Like other human affairs, the work of the proposed Dominion Board must undergo a course of evolution, its weaknesses must be found out and remedied by practice. We think it a very promising beginning, and surely at the present time what is needed by those in favour of the scheme is not so much destructive, or would-be destructive, criticism as constructive ; it should be shown not so much where the scheme is weak as where it can be mended and improved, and this course is not taken by Dr. Jones. We would say, let us urge on Dr. Roddick's scheme with the constant understanding that as its weaknesses become manifest in practice, so they shall be remedied. In short, what is needed for Dr. Roddick's scheme at the present moment is a loyal support with a clear recognition that some definite beginning is to be made towards the development of higher medical education throughout the Dominion.



## Proceedings of the McGill Medical Society of Undergraduates.

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### THE ETIOLOGY AND TREATMENT OF EMPYEMA.

BY

J. C. COLBY. B.A.

Empyema is a term which has undergone a good deal of alteration in meaning within a few years, but, with your permission, I shall restrict its use this evening to indicate a collection of pus within the pleural cavity.

Almost the first surgical dressings which I saw applied last year was an aseptic compress intended to soak up malodorous pus, which was discharging from an intercostal sinus. The marked scoliosis and pained expression of the patient's face were slight indications of the months of antecedent suffering, and hardly a day passes by that such a dressing is not applied to some unfortunate at one or other of our hospitals. That pus is constantly inimical to the well-being of the human genus, I had in some degree realized, but to what an extent and in what manner, a visit to the Out-door Surgical made plain. When, therefore, the Committee of our Society granted me twenty minutes in which to introduce a discussion here, I determined to make an inquiry into some of the varieties of pus and their varying degrees of virulence in the human body, choosing the neighborhood of the thoracic viscera at one likely to be a typical ground for pus formation.

I soon learned that bacteriology had indicated some few rounded unicellular organisms as lying chiefly at the root of pus formation, notably those which grow in colonies of microscopic bunches or chains.

These lowly creatures, first adequately described by Ogsten and Weichselbaum in their studies of the affliction of Job, had for a time been regarded as specific in pus formation, but shortly afterwards evidence was found that other cocci might, under proper conditions provoke similar results in affections of other parts, as of the urethra, appendix vermiformis, peritoneum, kidneys, meninges of brain and cord and more especially for our present purpose, in affections of the pleuræ and lungs.

Long before the microscope had been called to the aid of the clinician, however, there had grown up a whole system of symptomatology and treatment of empyema both on the medical and surgical

side, and in classification it was reckoned a sub-species in the larger class of pleurisy with effusion.

One chief variety of pleurisy with effusion had been set down as the result of exposure to cold and its onset after such exposure, often without other definite antecedent, was the chief ground of that classification—purely an argument by exclusion. Kelsch and Vaillard in 1886, however, published observations on 16 autopsies which revealed pleurisy of long standing (in some cases undergoing partial recovery) all in the highest sense typical of pleurisy *a frigore* in which smears from the surface of pleuræ and of the exudate revealed no micro-organisms, nor did inoculation of the pleural exudate into mouse, guinea-pig and rabbit yield symptoms of discomfort. Sections of the false membranes of parietal and visceral pleura, however, revealed the tubercle bacillus in abundance. The six empyemata included in their description yielded in four cases staphylococcus; in two streptococci. This investigation stands strongly in favor of the tubercular origin of cases of the primary pleuritis where no culture growth can be obtained from pleural effusion during life; there being absolutely no physical signs of tubercle infection.

Considering empyema then as a variety of pleurisy, we come to those numerous cases where the pleuræ become involved secondarily to pneumonia, and again it is in France that a distinction of some clinical importance was first drawn. This relates to the parapneumonic and metapneumonic pleurisies and empyemata. These forms differ from one another in progress, and, if recognized early, are among the most amenable to treatment, for once thorough evacuation of the effusion has been effected there seems to be a strong tendency to recovery. The onset of the pleural lesion in these cases is often so insidious as to be for a time, at least, overlooked, much damage in the meantime resulting.

Pure cultures of pneumococci are frequently to be obtained from these cases, or often associated with the staphylococcus aureus and streptococcus. The channel of pleural invasion must remain a matter of pure theorizing in most of these cases; the easiest mode of infection being the close contiguity of lung and visceral pleura. Many a case of empyema, properly belonging to this class, has been overlooked until late in its evolution, or, if symptoms were only fairly pronounced, mistaken for an unresolved pneumonia.

Any attempt at a complete classification of the various empyemata must include those in which the typhoid bacillus is found in the exudate, those following scarlatina and the infectious diseases and those occurring in pyæmia and septicæmia. Injury to the chest-

wall, puncture of the pleura as by instruments, compound fracture of a rib, bursting of a sub-phrenic, mediastinal or retropharyngeal abscess, together with the not unknown infection of the pleural surface by the colon bacillus, are conditions which every now and again call for comment in the journals.

The early differentiation of the serous from the purulent variety is often of value in the treatment selected. In ideal cases the higher temperature and signs of toxic poisoning may give a clue in a general way, but many an empyema has been overlooked from the absence of these symptoms and only when a necrosis has been set up sufficient to rupture into a bronchus or intercostal space, is the purulent nature of the mischief recognized. This difficulty of diagnosis brings us to consider a most useful measure when used as diagnostic chiefly—aspiration. With, perhaps, an hypodermic needle one may draw off a few cubic centimeters of the exudate and so be convinced by ocular demonstration of the true nature of the case in hand.

The results thus obtained are not always trustworthy as the following possible happenings clearly prove:—At the first aspiration a serous fluid let us say is withdrawn, examined with microscopic aid and culture growth attempted, all with negative results. Persistence of untoward symptoms may require a second test and at this repetition a purulent fluid is withdrawn. Naturally the temptation arises to doubt the efficacy of even the most rigorous aseptic measures, or a grain of comfort may be had if we suppose the formerly sterile, tuberculous (?) fluid has at last turned purulent by the invasion of other organisms. Or, again, a large effusion may exhibit layers of density greatest at the bottom, least towards the surface; one part containing the pus cells and bacteria, the other serum with few cells or none. Facts such as these have led Holt in his consideration of empyema in children to state that he has seen but one case of a serous exudate turning purulent. All other cases in his practice exhibited pus at the first aspiration. So far as I know this is an unique record and may speak volumes for its technique. This noteworthy exception aside, few observers have just right to regard their technique as beyond question.

Should the serous exudate contain free bacteria there arises the nice point of probability of future pus, for the staphylococci have been isolated from non-purulent exudates. These staphylococcal cases are cited as of possible tuberculous origin if there is no direct evidence of other tuberculous affection. They tend to heal rapidly after a single puncture (or incision of the chest wall) in a manner closely allied to the tubercular peritonitis. Having glanced at our most ac-

curate diagnostic agent—the hollow needle and its limitations, let us consider if there be any possible explanation of the presence of streptococcal and staphylococcal pus in a thorax unmolested by trauma, ruptured bronchus or diaphragm. Holt asserts that fully nine-tenths of empyema of childhood follows upon pneumonia, and, in adults, 75 per cent. He gives the following bacterial findings in 19 cases of pyothorax:—

|                              |                          |   |
|------------------------------|--------------------------|---|
| Pneumococci.. . . .          | 14 times in pure culture |   |
| Streptococci.. . . .         | 3 times                  | " |
| Pneumo and Streptococci. . . | once                     | " |
| Staphylococci.. . . .        | once                     | " |

The question arises, can streptococci set up pneumonia, and may they be responsible for a concurrent or later invasion of the pleura? In reported cases of pyothorax authors do not appear to have taken this possibility into consideration. At the end of a case in which the personal history contained a note of antecedent pneumonia, one may be fairly sure to see as a bacteriological finding a pure culture of pneumococci or mixture of pneumococci and streptococci. It is more rare to see more than an expression "some lung trouble" in the personal history where streptococci appear in pure culture as a bacteriological finding. The inference of an antecedent streptococcal pneumonia is, at least, tempting in these obscure cases where the patient is doubtful as to the exact nature of an antecedent thoracic lesion. That streptococcal pneumonias do occur has been pointed out by Weichselbaum though he found mixtures of streptococci and staphylococci more constantly than he did either alone. As, then, a pneumococcal pneumonia is at times followed by a pneumococcal empyema, so also, though not clearly pointed out in the texts a streptococcal pneumonia is not uncommonly followed by a streptococcal empyema. But, as outside the body pneumococci flourish for a shorter time than do the streptococci, so also in cases of empyema the treatment of a streptococcal variety is attended by greater difficulty owing to the higher resisting power of streptococcus. Even giving speculation some lee-way in this matter of the streptococcal empyemas the most typical variety in adult life remains as somewhat of a stumbling block in the matter of precise etiological significance.

In the matter of staphylococcal empyema we may remember that associated with its ally the streptococcus, the staphylococcus inhabits the normal skin, mouth and pharynx. We may regard it as but natural that from its presence in air and in passages towards the



lungs empyema will constantly be noted to contain a pure culture of one or other coccus or a mixture of both.

Kiener, however, is rather upsetting in the statement founded on examination of a good quantity of material post mortem, that he had never seen staphylococci in a meta-pneumonic pleurisy before pleurotomy or rupture of a bronchus and that in autopsies following the exitus lethalis in infected broncho-pneumonia, he had found diplo and streptococci in the pleura, pericardium, endocardium and meninges and never staphylococcus, even though he had been able at times to demonstrate it in the lung. He finds staphylococci, in short, most frequently in cases of tuberculous pyopneumothorax. As cited above, he has seen cases of serous effusion with staphylococci which recovered without evident pus formation. Prinz Ludwig-Ferdinand, of Bavaria, had two similar cases under his observation at Munich.

Probably no two recorded cases of empyema run exactly the same course. The condition is but seldom unaccompanied by some more or less disturbing element—its very proximity to heart and lungs is bound to react on these organs, so that life itself is threatened. A large exudate of pneumococcal pus in the left pleura may be more difficult of treatment and exhibit more alarming symptoms than a much smaller streptococcal one in the right, although, in a general way, streptococcal pus or the toxins absorbed is more offensive to the organism than the pneumococcal variety. In average cases, however, we are justified I think, in relying to a considerable extent on the bacteriological report for the formation of our prognosis and selection of a line of treatment. Whether from antecedent causes or innate virulence the pneumococcal variety appears the most benign. The streptococcal empyema is the most sudden and critical in onset, the staphylococcal most prone to relapse and irregular in progress towards recovery, while the tubercular variety, though at times easy to suppress, in cases of local tuberculous pleuritis is most baffling, even hopeless in advanced phthisis or other grave visceral lesion. The morbid anatomy also differs to no small degree according to the nature of the bacillus observed—whether by coincidence or not. For example, in the local tuberculous pleuritis there is a great thickening of the two pleurae; fibrin is thrown out and becomes vascularised; the tubercles remaining in its deeper layers. The pneumococcal and streptococcal pus is almost without exception reported as being agglutinated, pervaded by masses of fibrin of larger or smaller size; while in marked distinction lies the staphylococcal pus, of thin watery aspect, not walled off by any masses of adhering fibrin and apparently acting as a peptonising ferment

rather than a coagulating one, as pointed out by both Kiener and Lop and Monteux.

In speaking of the operations devised to meet the indications, attention will again be called to the nature of the streptococcal invasion.

The differences above mentioned in the nature of the pleural lesions by the different cocci are becoming generally recognized, and though open to some serious objection on the ground of second-hand evidence and desire to point out from a single case the many peculiarities of the type as seen in scattering ones; I shall venture to select from different observers a single case where the germ involved was present in pure culture, that we may see if there be really clinical differences warranting a bacteriological examination in all cases, or, if the observations be too discordant to permit of generalization.

The progress of the cases while under treatment can, I believe, be of minor interest, for the treatment has been symptomatic throughout. Palliative, tentative measures have been the blight on the reputation of the accepted treatment of empyema. If a uniform method of treatment had been followed in four hundred cases I feel sure the results would serve to illustrate in a remarkable manner the specific characteristics of any one organism in its invasion, and that subsequent treatment, adopted as best suited to stamp out a particular invasion (or insurrection), would cause the duration of treatment, crisis and convalescence to be reckoned in days or weeks instead of weeks (or oftener months) in those cases which do recover. Frankel describes at considerable length a case of *pneumococcal infection* of the pleura in an adult, which, though running much too long a course and terminating in rupture of a bronchus, yet shows that in spite of misguided human endeavor pus will find out the way.

The patient was a bricklayer of 28 years admitted for treatment on June 3rd, '87. There was a history of right-sided pneumonia on two occasions, once during military service and again within two years. The present illness began with a chill on May, 29th, followed by fever and pain in the right side of the chest, and appearance of a bloody sputum. Dating from the fourth of June, the patient was a well nourished man of strong build, red cheeks and clear skin which was hot and dry, only a little moisture being present in the axillæ. Respiration was somewhat labored costal in character, and reinforced by the scaleni; thorax well developed and of good capacity. The percussion notes in front were equal on both sides above the fourth rib, where dulness commenced on the right. In the right side of the chest the note was of a little higher pitch. Breathing was vesicular on both sides; a little rougher on the right. Posteriorly dulness was evident on

the right side below the spine of the scapula. Loud bronchial breathing was heard on the right side down to the spine of the scapula, accompanied by crackling râles. Below the spine the breathing was indistinct, also accompanied by crackling râles. The breathing was vesicular over the whole area of the left side. Typical rusty sputum present. Heart sounds were normal. Cardiac dulness not displaced towards the left. Tongue moist, coated, white; abdomen slightly tender on pressure.

The urine was reddish and clear; free from albumen about 900 ccm in amount and of sp. gr. 1012. Evening temperature 103, morning temperature 101.4-5; pulse 104. Respiration 36.

Treatment.—Eight dry cuppings on the right side and decoction of Senega internally.

June 5th, profuse sweating. June 7th, morning temperature 99 1-5; evening temperature 100 4-5. Two teaspoonfuls ropy mucus expectorated. The area of dulness posteriorly on the right side begins to lessen and is present only below the angle of the scapula. General conditions good except for the pain in the chest which persists.

Despite the apparent change for the better, the next succeeding days showed morning temperature varying from 99 2-5 to 100 1-5, and evening temperature from 102 1-5 to 104. The dull area began to increase again until the tenth of June it had risen to the middle of the scapula. The right lateral area gave no evidence of marked improvement for, in addition to the dullness, a friction rub was audible. The sputum was viscid mucus. No tubercle bacilli were to be found in it. From the 13th, slight chills came on towards evening, followed by fever and profuse sweating. Under this unmistakably septic fever the patient began to lose flesh; the arteries were narrower and less full, so that finally on the 19th, an exploratory puncture was performed in the right side behind at the inferior portion of dull area in the ninth space. A small amount of thick, purulent exudate was withdrawn which contained, in addition to the pus corpuscles, numbers of pneumococci. The fact that puncture had to be performed in several places before pus was found, as also the deep situation of the same, indicated that the collection was strictly localised. Following puncture the treatment remained of the stimulating and expectant character. On July 2nd, a paroxysm of coughing brought up a scanty half viscid sputum which soon took on the character of homogeneous pus. The odour was in no-wise fœtid. On July 4th, two punctures were performed in the eighth space with result similar to that of June 19th. Culture of pus on agar remained negative.

July 12th. Great pallor and emaciation. On deep inspiration, the



expansion of the right half of the chest was markedly less than the left. The percussion note in the left supra and infraclavicular fossæ was rather dull as also in the upper region of the right chest where indistinct breath sounds and occasional râles were audible. Behind also the flatness (dulness) of the right side was marked especially towards the base. The apex beat of the heart was visible and in its normal position. Auscultation revealed a blowing systolic murmur at the apex; other sounds normal in præcordium; spleen not enlarged, tongue clean, appetite good, sweating was profuse, especially at night. Temperature 101 1-5, pulse 92.

July 23rd:—Temperature was normal, sputum almost nil, but the dull area kept on increasing in size. A third puncture with large trochar and cannula removed about 4 c.cm. of pus. Pneumococci were found in this exudate in zooglea masses. A culture was made on agar and inoculation into a guinea-pig.

July 25th:—Typical pneumococcal growth on agar. Animal found dead in the cage early in the morning.

After 31st July fever disappeared, as did the sputum which had for a few days increased in quantity and become purulent. Ten days later patient quit his bed. Under influence of good diet the healthy color returned nutrition rapidly improved, and, at the end of August, he left the hospital without any inequality in the sides of the chest. The septic condition lasted about three months, pointed to a bronchus and, being of small extent, did not happen to suffocate the patient.

The *streptococcal infection* selected was observed by Prinz Ferdinand of Bavaria and Von Ziemsen, in 1890.

Paul V., aged 22. Has had pneumonia of the left inferior lobe, also a gonorrhœa. Parents apparently died of trichinosis; a brother is suffering from the same infection.

Two days ago was taken with a violent cough, pain in the right side, head and loins accompanied by fever. At present he is a well developed, well nourished man suffering from high fever, nasal catarrh, laryngitis, double conjunctivitis. Boundaries of both lungs normal. good expansion. Right inferior lobe yields a slight tympanitic note; no dulness. There is remarkably sharp vesicular breathing. Rest of lung normal.

Abdomen and liver show nothing apparently abnormal; spleen is slightly enlarged; urine free from albumen, high colored. Continuous fever as high as 102 began on January 1st ('90), with pain in side and dulness in right inferior lobe, bronchial breathing, increased vocal fremitus.

Next day the symptoms became more pronounced, pain in right side



increasing, dyspnœa marked, loss of sleep, want of appetite. Marked area of dulness below at the back. Bronchial breathing, bronchial vocal resonance sound. January 4th—Rusty sputum, temperature varying from 100.1-5 to 102. General condition decidedly bad. Dulness, bronchial breathing especially at the base, vocal resonance more pronounced.

January 10—Exudate apparent in the right chest temperature irregular between 98.2-5 and 102.

January 18—Exploratory puncture removed about 1820 grammes of a purulent exudate from the right cavity.

The pus formation continued, however, fever remaining high, and on 20th January, thoracentesis was performed with resection of a piece of the sixth rib. About three litres of pus were removed. After operation, the temperature began to fall off. Dressings were changed every three days. On February 20th the drains were removed, the operation wounds packed with iodoform gauze. The chest wall began to fall in somewhat.

February 27th—Patient was transferred to Convalescent Hospital, but on March 11th returned with recurrence of the empyema which had ruptured into a bronchus and set up pneumothorax.

Patient is now pale shows poor nutrition, great collapse of right side, symptoms of a right-sided circumscribed pneumothorax. Succussion splash readily heard. Metallic note on percussion. Nothing abnormal in heart or abdomen. Temperature rises at times to 104.2-5. Exquisite pain in the side. Exploratory puncture in axillary line reveals pus.

March 21st—Coughs up pus; fever abates, sputum diminished; gentle amphoric breathing heard at the right base. Recovery uninterrupted and rapid. Smear of pus from puncture of January 20th stained with carbol fuchsin revealed streptococci in chains of varying length. Plate cultures on agar gave pure culture of streptococci.

Onset sudden, symptoms alarming, condition only temporarily improved by removal of exudate by means of puncture is a common picture in the streptococcal empyema. Pus is usually thick, creamy, containing flakes and clots of fibrin though not demonstrated in this case.

*A staphylococcal case reported by Lop and Monteux in 1898.*

A large stout, strong, healthy man, without hereditary or personal lesions. Early in March, of '97, after the Nice Carnival, was taken with violent chills, pain in the left side, fever, and rusty sputum. Seen by Dr. Lop on April 4th who diagnosed a pleural effusion extending

upwards to the spine of the left scapula. Heart displaced far to the right.

General condition, critical, orthopnoea, cyanosis, small pulse, scanty urine; temperature 101 1-5.

April 6th—Great dyspnoea. Thoracentesis performed with all possible aseptic precautions. Four litres of thin serous fluid were evacuated in an hour. Marked improvement was soon evident. April 11th—Dyspnoea reappears. Heart is again found strongly displaced to the right. Third puncture performed and three litres sero-purulent fluid withdrawn. Pleural cavity irrigated with sublimate 1-1000 followed by boric acid 20-1000. Temperature fell from 101 1-5 to 98 at once and remained at 101 1-5 until April 27th. The day before the first puncture 10 c.cm. of liquid were removed with a Roux syringe with all antiseptic precautions, two tube cultures made.

Polynuclear pus cells were found with rare non-capsulated non-lanceolate diplococci—at one place a bunch of four together was discovered. Bouillion after 24 hours gave small bunches of staphylococci—no evidence of pneumo or streptococci. Operation was decided on with cocaine anæsthesia. Three litres of sero-purulent fluid were evacuated—drainage tube inserted and antiseptic compress applied.

May 14th—A siphon was introduced and remained until June 20th. Fall in temperature accompanied gradual diminution of pus flow, but on evening of June 20th, the patient is allowed outside. Has a chill and pain—the fistula is found partially closed—dilated with laminaria tent and drained again under better conditions. Lung begins to expand—no retraction—general condition good. Absence of streptococci from serum was noted 15 days after readjustment of the siphon.

Under the treatment of "wait a bit," let the patient alone, pray for rupture into a bronchus, only interfere surgically as a last resort, (and then but partially) we see in all cases a more or less prolonged illness of three to five months in favorable conditions. The evacuation imperfectly performed by tube methods does not completely remove the septic agent, though it be the most favorable staphylococcal pus, free from fibrin and clots. It is doubly unsatisfactory in pneumococcal, streptococcal and tuberculous exudates, where fibrinous septa often become closed off sacs of matter unexplored or a clot of fibrin dams back the exudate from the tube.

But to consider the practice which time has evolved in all its details would require another hour or so. Briefly let me direct your attention to the fact that treatment has long proceeded along two lines—the internal and surgical. Internal remedies designed to cause absorption of a purulent effusion seem to invite the exitus lethalis via toxæmia

and septicæmia rather than a return to normal health. Yet these remedies have been used with the hope that anything would be less dangerous than surgical interference which has until recently been kept in reserve as the last heroic act of a drama where by irony of custom the patient is regarded as a victim, the doctor or surgeon a sort of high priest of sacrifice.

It is a matter of record that surgeons before Hippocrates resorted to operative measures with clean hands and hot irons. Patients did recover in spite of sceptic invasion.

Pliny the elder has a story of a Roman Knight who suffered torment from empyema and placed himself in the front rank of battle hoping to end his life as a noble post: he did receive a lance thrust, lost a great amount of pus and recovered. At this distance it is difficult to guess, with certainty, at the bacteria present, but the copious amount, the fluidity suggest staphylococcus. Recovery after one puncture suggests tubercular infection invaded by pneumococci.

Even to our own day numerous physicians and surgeons live in dread of the intra-thoracic pressure, collapsed lung and sepsis when requested to make more than a puncture of the pleural wall. Only the hopeless (?) cases were brought to operation a few years ago. Parietal pleura an inch thick refusing to comply with a collapsed lung was operated by excision of a portion of several ribs leaving the pleura unsupported. This fell in on the lung and in some cases after the subsidence of sepsis, if the case were not too long standing, the lung regained function re-expanded, pushed pleura back to nearly its normal position and in course of time new bony tissue replaced the old.

In conclusion let me point out that the votaries of internal medicine are recognizing the presence of pyothorax as a condition for surgical interference and to quote Carl Beck: At the ninth congress of Internal Medicine, Ewald seconded by Ziemssen, one of the greatest internists alive made the potent declaration that "Old cases of pyothorax should not exist and when they do the attending physician should be held responsible for their existence." And as long as the fable of spontaneous healing of pyotharax still haunts reputable text books on internal medicine the realization of such an ideal state of affairs cannot be expected."

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### THE TREATMENT OF SPINAL DEFORMITIES BY EXERCISE AND POSTURE.

BY

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There is perhaps no method of treatment at the disposal of the physician and surgeon that has suffered so much at the hands of friends and foes alike, as the application of exercise, and it has been left, by the great bulk of our profession, to gather the dust of neglect, rather, I think, from a sort of mental laziness than from a disbelief in its efficacy.

A tablespoonful of cod liver oil, a shoulder brace, or even a plaster jacket, is so much more definite and easily applied and is so much more tangible than half an hour's graduated exercise that, however ready and willing we may be to admit its value in suitable cases, the next crooked back that enters our office is apt to be put off with some such make-shift. When exercise is prescribed, it is often done in such an indefinite and haphazard way that the results cannot be followed. It is as if a patient were turned loose in a well-stocked drug store and told to help himself to the tonic bottles.

But what the reputation of exercise as a means of treatment has suffered from indifference or opposition, is as nothing to what it has suffered from its alleged friends. There is a strong conviction in the minds of the laity that by exercise most extraordinary results may be obtained, and, working upon this belief, machines have been invented and systems have been started promising the cure of everything from anæmia to zymosis, from the reduction of undue obesity to the adding of a cubit to the stature. And the disappointment resulting from the



failure to fulfil extravagant claims, together with the warrings and jealousies of rival promoters of these systems, has brought the whole question into disrepute.

Lest I should fall into one or the other error, I would like to define clearly just what are the conditions in which, and the extent to which, one can count on getting improvement from the direct application of exercise to deformities or irregularities of development in the region of the spine.

In speaking of deformities I would like to be understood as excluding such conditions as tuberculosis of the bone or Pott's disease, and most cases of rickets, being of the same mind as Ecclesiastes the preacher, when he says: "Who can make that straight which He (the Lord) hath made crooked." And I would include such conditions as fatigue scoliosis, round shoulders, uneven shoulders and flat chest, which are usually the result of such human agencies as are more directly under our control.

If you will consider with me for a moment some of the causes that give rise to these deformities, it will help to make clearer the theory on which my work is based. And then by showing a few typical movements we will be able to illustrate the method of applying the exercise to the particular case as it presents itself for treatment.

To pass over the question of heredity, which plays a not unimportant part in making children susceptible to weakness or curvature of the spine, an examination of the day's work of the average boy or girl from the ages of six to sixteen, will reveal powerful influences steadily at work during the period of active growth, to cramp the lungs and to fix vicious attitudes and habits, and to give a permanent distortion to the figure while yet it is in a condition to be most easily moulded for future good or evil.

During school hours the seat and the desk at which the child spends most of his time may be so high, or so low, or so badly proportioned as to keep him in perpetual discomfort, and the muscles of the back soon tire under the strain, letting his chin drop forward, rounding the back and shoulders and compressing the chest. The position when writing, more especially with the slanting script, is responsible for many skewed backs, in fact, lateral curvature has been called by one authority "the writing position become fixed."

The rapidity with which fatigue comes on in the standing position, and the way in which the weight habitually settles down on the support of one leg thus tilting the pelvis and shoulders and curving the spine, shows the risk of attempting to keep children long in any one position.

Fixity of any kind is the worst possible condition for growth, and the

constant dragging of a weight however small will overcome the strongest muscles. A surgeon, recently returned from South Africa, tells me that the regular soldiers all have a characteristic lowering of the right shoulder directly traceable to carrying a 10 pound rifle. Curvature has been traced even to the habitual posture assumed during sleep. (See note 1).

With so many active causes at work, there is little wonder that we find a great number of children suffering from physical faults which usually involve a varying amount of curvature of the spine.

As we would expect, from their less active life, it is much more common among girls than boys, the proportion being about as five to one. But in an examination of 122 high school boys, I have found it present in 32 cases, and among college students I have found 87 cases in 446 examinations of men belonging to the most athletic class. The progress of curvature to permanent bony deformity follows a definite course which may be arrested at any stage.

In nearly all cases we have round shoulders, flat chest and protruding abdomen, a figure that Roth has aptly named the "Gorilla type." As the body weight is carried, when resting, on one leg, usually the right, that hip appears more prominent and the right shoulder low. This can at first be corrected by the patient, but in time it becomes more and more difficult, until this irregularity of the shoulders may be said to be permanent. The progress of the deformity may stop here; and I have seen men of fine muscular development, distinguished as athletes, showing this condition stamped on them from their school days.

Although this may be the extent of the deformity it goes on in most cases till we find a well-marked C-shaped curve, usually with the convexity to the left. The right shoulder may appear even higher than the left in spite of this curve, owing to a general deviation of the trunk to the left.

Following this condition we find some part of this curve becoming more pronounced and localised. A compensatory curve then develops in the opposite direction from the original deviation in the lumbar region, or, if the primary curve be found in the lumbar region, the compensatory curve will then appear in the dorsal. A third curve may appear, either high up in the cervical or breaking the continuity of a C. curve. In most of these cases the right shoulder tends to slope downward and forward, so that the first symptom to attract attention may be that the clothes tend to slip down off this shoulder.

The progress of a case may be varied at any point of its course and we may have all varieties and combinations presenting themselves for examination. So clearly does this condition depend upon the tiring of

the muscles, weakening of the ligaments and long continued vicious posture, that I have named it the "Scoliosis of Fatigue," in distinction to the scoliosis due to ricketts, pleurisy, infantile paralysis, uneven extremities or pelvic asymmetry.

This scoliosis of fatigue is so overwhelmingly the most frequent form that it is really the rule in practice, and curvatures due to the other causes just mentioned are comparatively rare exceptions. It is in these fatigue cases that we must look to exercise for its best results. In fact I cannot see how any other treatment can be rationally advocated. The plaster jacket has now been completely discarded and the pernicious shoulder braces that used to be found in every household are fast going into that obscurity from which they should never have emerged.

In treating a case of round shoulders we must first expand the lungs by deep breathing and so round out the flattened chest. Next the muscles of the upper back and neck must be fitted to carry out their function of holding the head in proper position; and lastly, the abdominals must be brought into vigorous action, while the correct standing posture must be thoroughly drilled into the patient that it at last becomes habitual.

Time would fail me to demonstrate all the movements that may be employed for these purposes, but I will give one or two typical exercises analysing their effects:

1. Patient standing, raise arms forward and upward, breathing in, rise on tip toes, lower arms outward and downward to sides slowly breathing out.

2. Patient prone on padded table or couch, feet strapped down, hands at sides, extend the neck trunk and arms.

These are known as straight exercises, bringing into action both sides of the body equally, and directed at group after group of muscles on both sides with the same force.

When the two sides are unequally developed the weaker side will get the most work and such exercises are quite safe even in cases of lateral curvature, just as a general tonic is of some use in all cases of debility from whatsoever cause it may be. But, just as in the use of drugs, we may get a little nearer the trouble by prescribing accurately for the exact condition, so we may also get our results more quickly and surely by striking directly at certain groups of muscles, localising the exercise to the exact region we wish to affect.

In cases where the right shoulder is low we could use the following movements:

1. Patient standing. Raise right arm above the head, left on the hip; forward head and rise.



2. Patient on table prone, feet strapped down. Extend neck and trunk, with the right hand placed on back of head and left on the hip.

When we come to a case of curvature, the problem becomes more complicated and each patient must be a special study.

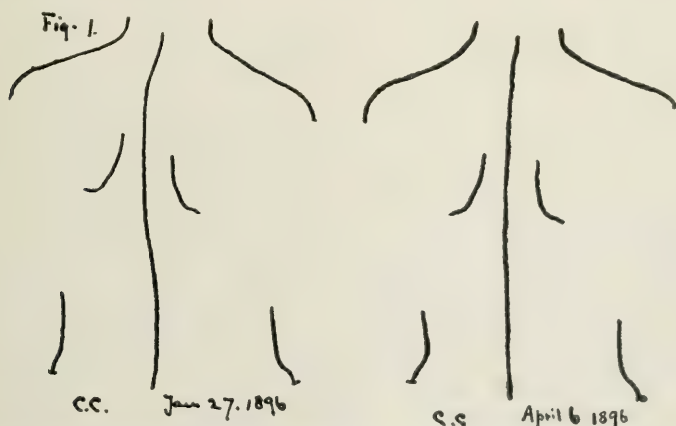
Before prescribing exercises to any particular case a diagnosis of the condition must be made after a careful examination of the back, exposing it down to the gluteal cleft. The spinous processes should be marked, the levels of the shoulders and points of the scapulæ should be noted, the amount and levels of deviation and rotation observed, and while stripped, the flexibility should be tested by bending forward and to the sides. The habitual posture should also be found. The patient should be put in the best possible position and made to take this pose by herself.

This best possible position should be the key-note of future work. It is to be remembered that the greatest amount of movement is obtained in the cervical region where we may get good results by the action of the trapezius, rhomboids and erector spinæ mass, and in the lumbar region, where the erector spinæ, quadratus lumborum and psoas muscles can be called upon to assist us.

In the mid-dorsal region, the presence of the ribs limits the voluntary movements, and we have to resort to stretching of the ligaments by mechanical force for the best results.

To illustrate the method of working out a prescription I will give a brief summary of one or two cases from my records:—

C. C., æt. 13, consulted me on Jan. 27th, 1896. On examination I found the right scapula low, left dorsal curve and a slight right lumbar



compensatory curve, trunk inclined over to the left, round shoulders, flat chest, protruding abdomen and general relaxation of the ligaments.

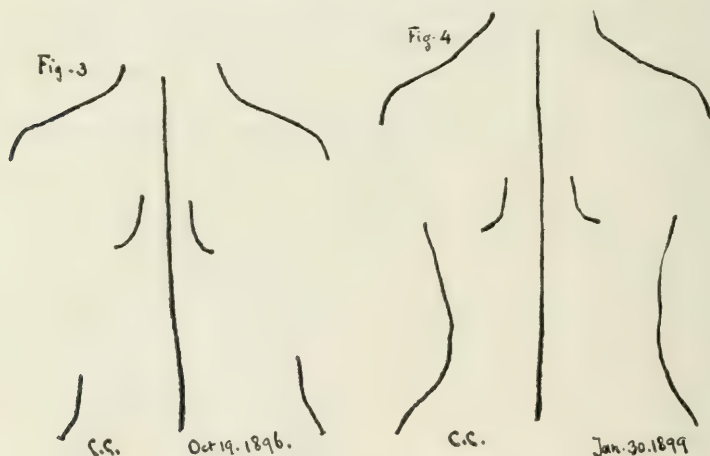


(Fig. 1). (See note 2). Her general health was not very good and two sisters had been treated for spinal curvature.

The indications here would be to work the erector spinæ, the extensors of the neck, to expand the chest, develop the abdominal muscles and raise the right shoulder; but in addition to this the curves must be reversed by such an exercise as this (1) Trunk extension, left foot fixed, right arm raised, left arm out.

Here the left erector spinæ and deeper muscles in the lumbar region act, while the raising of the right arm untwists the rotation and straightens the curve in the dorsal region. In this exercise, (2) Body supine, raise right leg, surgeon resisting, the psoas is put strongly into action and the bodies of the lumbar vertebræ are pulled around the articular facets, their axes thus reversing the rotation.

I have already illustrated the kind of movement used in raising the shoulder, but here the neck must be extended unevenly putting more



work on the right side. As would be done in this movement, (3) Extend neck, right arm up, left arm down.

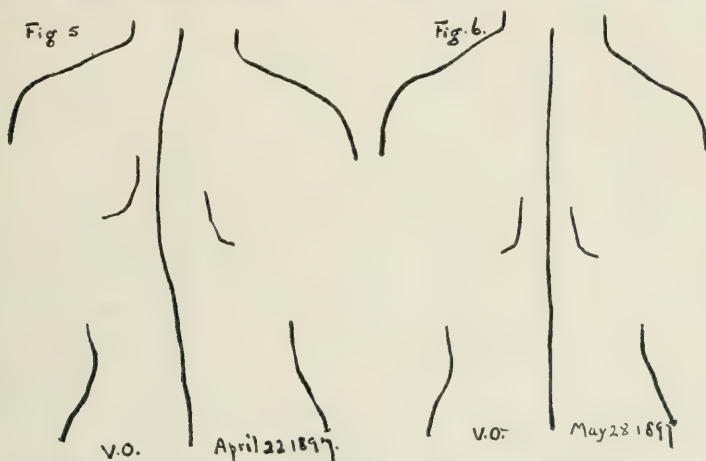
After daily treatment, lasting a little over two months, in which about fifteen movements were given, each repeated from twenty to thirty times, the second tracing was obtained (Fig. 2). She then reported twice a week for two months taking a modified daily prescription at home on off days. She then left the city for the summer and in the following October the third tracing was taken (Fig. 3), showing that the improvement was so far permanent, and on Jan. 30th, 1899, or over three years later, the fourth and last tracing (Fig. 4) shows that the corrected position has been maintained. It will be noticed that the patient has developed from the child of 13 to the young woman of 16.

One of the disadvantages that this work has to encounter is the difficulty of keeping cases under observation for a sufficient length of time to demonstrate the permanency of the improvement or cure.

I do not wish to tire you with undue repetition but would like to quote one more example from my case book.

V. O., æt. 21, came to see me April 22, 1897. At the age of 8 years she fell down stairs and was confined to bed for three months after it. She states that ever since that she has been subject to pains in back at point of right scapula, burning or boring in character, and much worse after sitting still for any length of time. Has been unable to attend school or do any work on account of pain and fatigue after exertion.

Examination.—Ill-nourished and anæmic, flat chest and prominent abdomen, projecting chin and round shoulders, right scapula an inch and a half lower than the left (Fig. 5). S-shaped curve showing rotation



in both lumbar and dorsal regions disappearing on flexion. Flexibility good; iliac crests even in height. Patient winces on pressure over the point of left scapula and left lumbar region.

I note, under date of May 28th, she has been at work daily for one month, spine almost straight (Fig. 6), right shoulder still lower than left, improvement very marked. Occasional pains, not constant in location or duration, probably hysterical, general condition much improved. To continue daily work at home for one month and report.

June 30th. Improvement fairly well retained, pains still occasionally felt but not constant in location. She can attend ordinary work without discomfort.

In this young woman there was an undoubted tendency to hysteria,

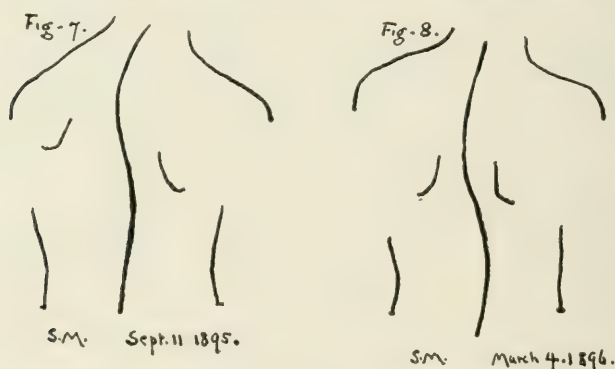
and this we find in many such cases, the exercise always having a most salutary influence on them.

In paralytic cases where there is a short osseous curve localized and fixed, the best thing we can do is often to develop a good compensatory curve and so give a general appearance of symmetry to the outline of the back.

S. M., æt. 9, consulted me September, 1895. At the age of three years he had left hemiplegia, lasting six months and gradually passing away to all appearances. About two years ago noticed while walking that left shoulder protruded.

*Examination* showed left lateral curvature high up in the dorsal region, no compensatory curve present (Fig. 7), marked dorsal rotation, flexibility greatly diminished and gorilla type of figure.

After two months' work the second tracing was taken, showing the



development of a compensatory curve in the lumbar region and the lowering and replacing of the left scapula.

The improvement continued till the 4th of March, 1896, when a third tracing (Fig. 8) was obtained, showing a further lowering and replacing of the scapula at the expense of an increase of the lumbar curve. This was the extent of improvement that could be obtained.

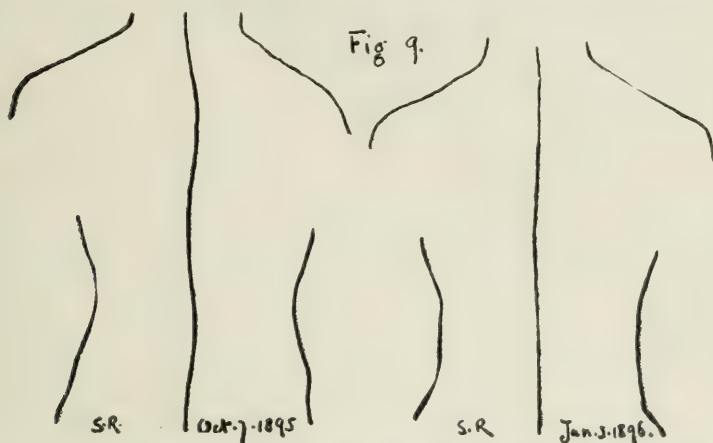
In the few cases where the curve is due to the uneven length of the lower extremities the shorter limb must be raised till the iliac crests are on the same level and then the muscular development can be properly attended to.

One of the most important points in the treatment of all these cases is the development of the thorax, and it is remarkable how much improvement can be obtained in this direction by appropriate movements. Among others I have found an application of Sylvester's method of artificial respiration very good. It stretches the thoracic walls and

develops the intercostals. Some cases show a remarkable increase in chest capacity:—

S. R., æt. 18, came to see me complaining of pains in back, round shoulders and lateral curvature. There was a strong family history of tuberculosis. On Oct. 7th, her lung capacity tested by the spirometer showed eighty cubic inches, the average capacity for a young woman of 18 being over one hundred and fifty.

On Nov. 26th, less than two months, it was one hundred and ten, and



on Jan. 3rd, it was one hundred and twenty-five, the pain was gone and the curvature corrected and her general health much improved (Fig. 9).

Here was an increase in capacity of forty-five inches after three months' work.

While such a result is unusual, still, out of thirty cases that I have looked over I find an average gain of twenty-one inches, and among these there are several who have increased from thirty to thirty-five in less than three months' daily treatment.

There is nearly always a general weakness of the ligaments present, and this shows in a tendency to flat foot, so that wherever the exercise permits, the movements should be accompanied by rising on the toes.

NOTE I.—Bed Posture as an Etiological Factor in Spinal Curvature. By George W. Fitz. *Transactions of the Orthopedic Association*, 1898.

NOTE II.—For description of the instrument by which these tracings were made, see MONTREAL MEDICAL JOURNAL, February, 1898.



## PYLORIC STENOSIS WITH HYPERTROPHY.\*

BY

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The patient whose condition affords the subject of these notes was under the care of Dr. J. C. Cameron, and to Dr. Cameron I am indebted for the privilege of observing the case and of making this report. Cases of this kind are of such rarity that the presentation of one more becomes almost a duty, not so much on account of this quality perhaps, but rather because of the fact that there seems to be at least an opportunity for relief, temporary it may be, to the symptoms associated with such condition. The text-books contain but little on this subject, yet one finds through the literature several articles and scattered case reports dealing with similar conditions, although often variously described.

In the spring of 1900, H. T. S. æt 59 years, found himself in failing health. Although never a rugged-looking man, he had led an active life and was regarded by his friends as having a "wiry" constitution. Early in April he went to New York with the hope that a change of scene and air might be helpful. While there he became rather worse and it was thought that he took influenza. From the history, if this can be relied upon, this attack partook rather of the rheumatic or articular type, as he was troubled with pains through his limbs and joints, yet without marked joint affections. There was great difficulty in solving the question of his nourishment. Foods of various kinds in a variety of forms were provided, and yet it seemed impossible to get anything that was satisfactory. The patient became intensely nervous, introspective, unable to sleep, and extremely sensitive upon all points pertaining to his condition.

When first seen in June, 1900, he was greatly emaciated, weighing about 98 pounds. He complained chiefly of the distress in his stomach, of weakness, of insomnia, and of being constantly disturbed by the street noises, although his house was situated in a comparatively quiet part of the city.

The temperature was 98° F., the pulse 54, and respirations 16. The tongue was coated, the bowels constipated, the skin dry and rough. He had never vomited during his illness. There were no symptoms of organic disease of the nervous system. He expectorated but little and

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\* Read before the Montreal Medico-Chirurgical Society, Oct. 4th, 1901.

affirmed that he had no cough. The examination of the lungs at first revealed no changes regarded as indicating diseased conditions beyond those of slight emphysema. The abdomen was flat with the bony parts in the boundaries standing plainly out. The walls were rigid and palpation was difficult. The rigidity was most marked over the right upper quadrant, into which it was impossible to make any impression. But a trace of free hydrochloric acid was found in the gastric contents, 28 cc. of which were removed after a test breakfast. There was no lactic acid. On withdrawing the stomach tube, some yellowish phlegm was found adhering to it. This was found to contain tubercle bacilli in scant numbers, and search for them in the sputum subsequently expectorated yielded corroborative evidence of their presence. Upon what had hitherto appeared to be a case of much obscurity, some light was thus cast, yet the course of the case did not justify the view that one was dealing with a case of chronic pulmonary tuberculosis in a lung somewhat emphysematous, although moist sounds were distinctly heard in the lower lobe of the left lung in September. He spat a little blood in October. The patient was never febrile until the end was at hand. Indeed his temperature was usually subnormal. The pulse was always slow, rarely going beyond 54 per minute. Positive physical signs did not develop in the chest during the remaining months of the patient's life.

The early part of the summer was spent in the city and in July he went into the mountains with some improvement, gaining several pounds in weight. He was able to walk about and seemed altogether less nervous. He returned to the city in the last of August with a distressing diarrhoea, which greatly debilitated him. After gaining again during September, he began to fail towards the end of October and, despite every effort to sustain him, he continued to lose flesh and strength, complaining of the distress in his stomach and of weakness. He never ate without protest repeatedly saying, even after partaking of but an ounce of the blandest fluid, "My stomach is so full." "I am so distressed;" yet he never vomited. Often towards the end of his illness he became intensely irritable and excitable. He died on the first of March after a few hours of slight fever and increased respiratory rate.

Throughout, the diagnosis was difficult and nothing seemed more definite than that of a chronic pulmonary tuberculosis based upon the sputum examination. Yet, as has been already noted, strong corroborative evidence in physical signs was wanting. This diagnosis did not serve to explain the symptoms referred to the gastric region. Cancer of the stomach was considered as well as ulcer of the stomach,

yet there was no convincing evidence that either of these conditions existed.

Fortunately, an autopsy was secured. Even on inspection of the abdomen one could now observe for the first time signs of abnormal conditions lying within, for there appeared, passing downward and to the right in the upper quadrant, a distinct mass, which felt hard and cylindrical. On opening the abdomen the stomach was found lying obliquely across the upper quadrant; the pyloric end was abnormally low, passing well down towards the lower quadrant, this approaching the obliquity often found in early infantile life. The organ was greatly altered in shape and reduced in size. There was no evidence of peritonitis either recent or chronic. There were no abnormal glandular enlargements; the liver and spleen were practically normal. The kidneys showed some evidence of fibrosis with here and there a cyst upon the surface. Over both pulmonary apices, and especially over the left, strong pleuritic adhesions were found. The pulmonary tissue was markedly œdematous. The brain and other organs were not examined.

As the chief interest in this case is found in the condition of the stomach this may be described more in detail. We have already said that it was greatly altered in shape and reduced in size. The cardiac end of the stomach was flaccid and pouch-like, and bore upon its posterior surface, near the œsophagus, a small diverticulum, which when distended stood out about 3 cm. from the stomach wall and measured 2 cm. at its base. The lesser curvature, in proportion to the size of the stomach, was longer than usual, while the greater curvature was thrown into an irregular line by being drawn towards the lesser curvature at a point 7.5 cm. from the œsophageal orifice. Then these lines ran almost parallel towards the pylorus at a distance of from 3 to 4 cm., thus marking the upper and lower boundaries of a dense-walled cylindrical tube, about 9 cm. long, which terminated in a yet denser conical structure, 2.5 cm. long by 2 cm. broad at its widest part, the hypertrophied pylorus. The capacity of stomach including diverticulum, tested by filling with water, was only three and one-quarter ( $3\frac{1}{4}$ ) ounces.

The duodenum near the stomach was irregular in shape and the walls thickened at parts, and showed on section an increase in the muscular tissue. The lumen was of varying dimensions, to some three or four inches from the pylorus. (See photograph.)

On opening the stomach along the greater curvature there was some slight thickening of the wall at the cardiac end, but when the cylindrical tube, already partially described, was entered, the wall was much thicker and cut with increased resistance, while the thickness at the



pyloric ring was from four to five times the normal, varying from 1.5 to 1.75 cm. including the mucous membrane. As shown in the photograph of the interior, the mucous membrane over the cardiac end of the stomach presented a normal appearance. The orifice of the diverticulum above noted was plainly seen and readily admitted the index finger. Numerous regular folds of mucous membrane traversed the contracted portion of the stomach, while at the entrance to the pylorus they became irregular and deeper. The pyloric orifice would not admit a glass rod 5 mm. in diameter. The termination of the pylorus in the duodenum, viewed from the duodenal side, resembled not a little the cervix uteri in the vagina. While the thickened wall rendered the passage very small, the folds of mucous membrane occluded it almost completely. Nowhere throughout the interior of the stomach was there any evidence of ulceration, cicatrization or irregular infiltration, the mucous membrane moved freely on the submucosa and muscular coats.

Microscopic examination was made by Dr. A. G. Nichols, to whom I am greatly indebted for such services. Sections were made through the pyloric ring at a point about 5 cm. above this, and also near the fundus of the organ. The section through the pylorus showed some hypertrophy of the glandular elements of the mucosa. The submucosa was loosely areolar in texture and possibly thicker than usual, bearing numerous blood vessels. The mucosa presented otherwise a normal appearance. There was no evidence whatever of aberrant glandular growth. The most striking feature was the great thickening of the inner muscular coat, which consisted of large bundles of muscle cells held together by stronger bands of fibrous tissue. Under the high power the nuclei seemed to be larger than normal, and there seemed to be both hypertrophy and hyperplasia. The outer muscular coat was thickened, but to a less extent than the inner, while the serosa was normal. The second section, taken above the pyloric ring, showed a moderate degree of thickening of the inner muscular coat. Otherwise it was normal. The third section showed no abnormal changes.

The etiology of such a change about the pylorus remains unsettled. Tigler, writing in 1893, strongly objected to the view that these cases were congenital, supporting his objection by stating that the cases presented by Maier, who was a strong advocate of this classification, were not to be reckoned in such a category, and that all the cases reported both by him and Andral as well as by Lebert belonged to the middle years of life. He further stated that according to his knowledge there was no record of any genuine case of stenosing pyloric hypertrophy in the literature. However, as an appendix to his article, Tigler reviews reports of two cases found in the English literature, and adds by way



of comment that in all probability the majority of cases of pyloric stenosis with hypertrophy represented a congenital stenosis with secondary hypertrophy. John Thompson, speaking of this condition in early infantile life, urges that the essential lesion is not a muscular but a nervous one, and that stimuli within the stomach can scarcely be considered as acting to induce the spasm, but rather that there is a delayed or imperfect development. He regards the muscular hypertrophy as due to some sort of over action.

In those cases occurring in adult life, Tigler claims that the mucosa and submucosa are the parts first to receive the stimulation, and in them changes are wrought, as well extensive as permanent. Secondary to this comes the muscular hypertrophy, and then stenosis. There is in all such cases a dilated stomach. In many there may be a stenosis, slight and congenital, or stenosis may arise from other causes and yet the results may be the same. Irritation of the mucous membrane and any condition or situation, etc., determining blood to the submucosa and muscles are factors not to be underestimated.

In reviewing the history of the patient in connection with other cases it would appear that there is some foundation for the belief that for years, it may have been throughout life, there existed an anomalous condition at the pylorus. The diverticulum at the cardiac end certainly is among the anomalies, and such departures from the normal are seldom found singly. One might urge in favour of this view, again, that such a change arising in the course of a few months or even years would be marked by even more violent gastric disturbances, as pain and vomiting. The absence of gastric dilatation is very surprising, in the presence of so high a degree of stenosis.

There remains but to mention the surgical aspect, not so much perhaps of this case, but of those in which the changes are more closely confined to the pylorus. There are reports of cases successfully treated by divulsion and by pyloric resection and there can be no doubt that much remains to be done in these cases, not in the matter of etiology so much as in diagnosis and treatment.

To Dr. Patrick I am indebted for the photographs which illustrate this report.

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INNER ASPECT.

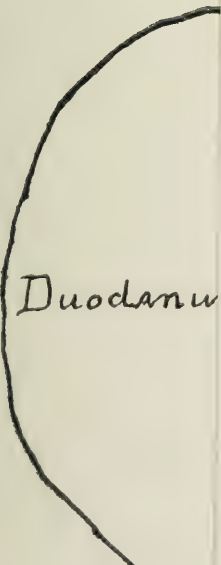




POSTERIOR VIEW.







Duodanu



Duodenum

TRACING OF STOMACH FILLED WITH WATER. EXACT SIZE.

## NOTES ON THE USE OF TUBERCULIN AS AN AID TO SURGICAL DIAGNOSIS.\*

BY

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Montreal General Hospital.

These notes, with copies of some charts showing typical reactions for temperature which follows the injection of tuberculin, were made in my wards at the Montreal General Hospital during the past six months. It occurred to me that a short paper on the subject might be of interest to the members of the society. I am indebted to my House-Surgeon, Dr. Henry, for the care and extra labour involved in watching the cases and making the notes.

My object in instituting the series was an effort to answer the following queries:—

(1) In what class of surgical cases, due to tuberculous infection, does the use of tuberculin give us most aid as a diagnostic agent ?

(2) Is its use followed by any untoward symptoms either local or constitutional ?

(3) How long after its injection should we expect the rise in temperature which shows the typical reaction ?

(4) Is the reaction constant when tuberculosis is present ?

In surgical cases one is so often called upon to decide whether a given tumour is of tubercular, syphilitic, or neoplastic origin, and the diagnosis is often so difficult to arrive at, that any method which tends to aid in its differentiation is deserving of our careful consideration. I therefore crave your indulgence for a few minutes while I refer to some of the clinical notes (with charts), before giving the conclusions at which I have arrived from my short study of the subject.

The tuberculin supplied by Dr. Trudeau of Saranac was used in all cases. The experiments would have been of more value had I been able to have two kinds of tuberculin, in order to try one where the other failed.

**Case I.** A. McL., aged 20 years, injury to right knee in October, 1900, with no acute arthritic symptoms until three weeks later, when knee became swollen and painful; symptoms

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\* Read before the Montreal Medico-Chirurgical Society, October 18, 1901.



becoming severer until December, 1900, when he became unable to work. Remote history of tuberculosis pulmonalis.

*Status Præsens.* Right knee—Synovial sac distended; boggy feel; no heat or redness; fluctuation present; pain on pressure over inner tuberosity of tibia; knee cannot be fully flexed nor extended; no pain on striking bones together. Marked atrophy of muscles of thigh and calf; typical fusiform swelling.

*Tuberculin*, mg.  $2\frac{1}{2}$  administered April 3rd, at 11 a.m. Temperature rose rapidly to  $102\ 2.5^{\circ}$  F. at 6 p.m., and fell after midnight. Reaction in seven hours. (Chart No. I.)

*Local reaction*—Slight redness and swelling with a little tenderness but no actual pain. Patient refused surgical treatment.

Case Report No. 348, 1901.

**Case II.** F. N., boy, aged 17. Three years ago had glands about left sternomastoid removed. Said to have been tubercular. Family history negative.

*Status Præsens.* Beneath angle of left mandible is a large hard lump, the size of a small hen's egg, movable, painful and tender; skin not adherent over it; slight redness; sense of pseudo-fluctuation; and below one or two smaller palpable glands. Growth began two months ago and has been gradual and constant. No other lymphatic enlargement.

*Tuberculin*, mg.  $2\frac{1}{2}$  administered at 9.35 a.m., April 10th, and temperature rose to  $100\ 4.5^{\circ}$  at midnight. Reaction in  $13\frac{1}{2}$  hours. Chart No. II.

*Locally*—Slight redness and swelling only.

*Pathological Report*—"Tuberculous adenitis." Gland encapsulated, caseation in the centre.

Case Report No. 371, 1901.

**Case III.** J. McG., male, aged 26. Swelling of glands on right side of neck for over eleven years, partly disappearing under local treatment (iodine). Four years ago, abscess formation, cheesy discharge, sinus healing rapidly. For past four years marked tumour; great increase in size for past two months.

*Status Præsens.* Tumour occupies space from ear, angle of jaw, down almost to clavicle; hard, lobulated, painless, and only slightly tender; no sign of acute inflammation. Below it cervical glands all palpably enlarged; supraclavicular glands small, mass overlaps the jaw bone; skin is not adherent; and mass can be moved slightly laterally but not vertically. Small scars at lower border at site of sinus mentioned above. Separate mass in submaxillary region, freely movable; no fluctuation.

*Tuberculin*, mg.  $2\frac{1}{2}$ , given at 4 p.m., April 15th, and at 4 p.m.

next day, temperature was  $103^{\circ}$ ; began to rise from 8 a.m., April 16th. *Reaction* in 16 hours. Chart No. III.

*Locally*—Slight redness and swelling. *Generally*—Malaise, feverish and headache on morning of 16th of April.

*Pathological Report*—"Tuberculous adenitis".

Case Report No. 387, 1901.

**Case IV.** Male, A. H., aged 17. Hip joint disease since infancy; abscesses at different times since then; last one in 1898, presenting in the thigh.

*Status Præsens*—Shortening of left leg in thigh section, trochanter  $2\frac{1}{2}$  inches above Nelaton's line; numerous scars from sites of operations for opening of abscesses over anterior and external surfaces of thighs. Muscular wasting.

*Tuberculin*, mg.  $2\frac{1}{2}$ , given at 9 a.m., April 15th, and at 4 p.m. April 16th, temperature was  $102^{\circ}$ . *Reaction* 31 hours later. Chart No. IV.

*Operated* upon April 17th; abscess opened; creamy, cheesy pus evacuated; no dead bone found. Pus was sterile but scrapings from abscess cavity showed a few tubercle bacilli.

*Locally*—Redness and swelling.

Case Report No. 378, 1901.

No reaction followed the use of tuberculin in the following cases:—

(1) In three cases of enlargement of the testicle, painless and slow growing, where no history of syphilitic infection could be obtained. All these cases afterwards yielded to antisyphilitic remedies, and I think it is fair to conclude that they were of specific origin. No effects whatever, so far as we could observe, followed the use of tuberculin in these cases.

(2) Two injections at different times, the last considerably larger than the first, were given a young girl who was transferred from Dr. Finley's ward (No. 457, '01) with a diagnosis of tuberculous peritonitis associated with marked ascites. She improved so much that, with Dr. Finley's concurrence, she was sent out of the hospital, but subsequently had to return and was operated on by Dr. Shepherd (No. 794, '01), when, I understand, a typical condition of tuberculous peritonitis was found.

The same result happened in a case of my own, a young lad upon whom I operated subsequently and who had the whole peritoneal cavity studded with tubercles. He made a good recovery though slow.

(3) A case of tuberculous arthritis of the elbow joint, which we afterwards excised, gave no reaction, as did also a case of tuberculous

adenitis; but in neither of these did I think that the test had been a fair one, as they were tried much later in the year and with some of the same old serum, which had probably deteriorated, as it was kept in the ward only and with no special care.,

In all the cases of the above series which were operated upon, the pathological reports verified the clinical diagnosis, and in all, care was taken to give the serum only after the temperature had been carefully observed for several days, in order to exclude as far as possible accidental variations. After giving the serum, the temperature was taken every two hours, and this should be kept up for 36 hours at least, as the reaction is sometimes delayed.

Our observations led us to give the following answers to the questions which we had set out to solve:—

(1) That tuberculin is valuable as a diagnostic aid in suspected lesions of glands, synovial sacs and bones. In tuberculous peritonitis, in the two cases tried, it gave no reaction.

(2) Its use was followed by no particular untoward symptoms, either local or constitutional.

(3) That the reaction as shown by rapid increase in temperature varies in time, appears early in acute cases where lesions are large, and should be looked for even as late as 36 hours.

(4) The reaction does not appear to be constant even when tuberculosis is undoubtedly present, but contra, in no case did we get any reaction when tuberculosis, so far as we could determine otherwise, was not present.

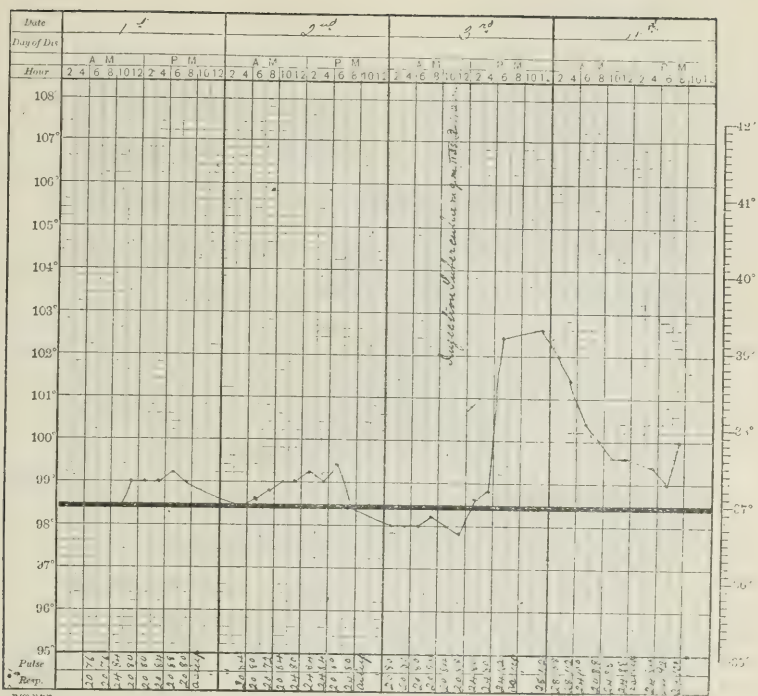


CHART I.

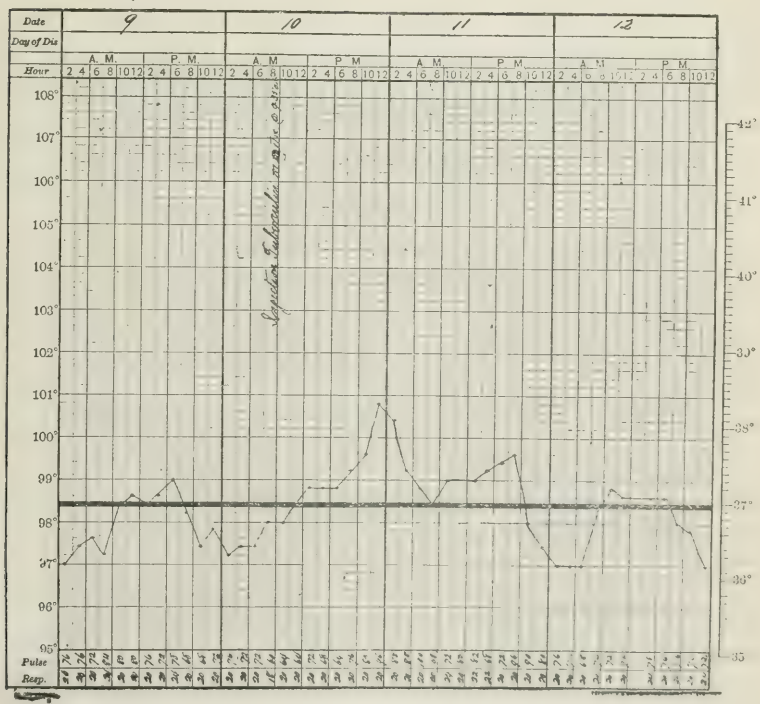
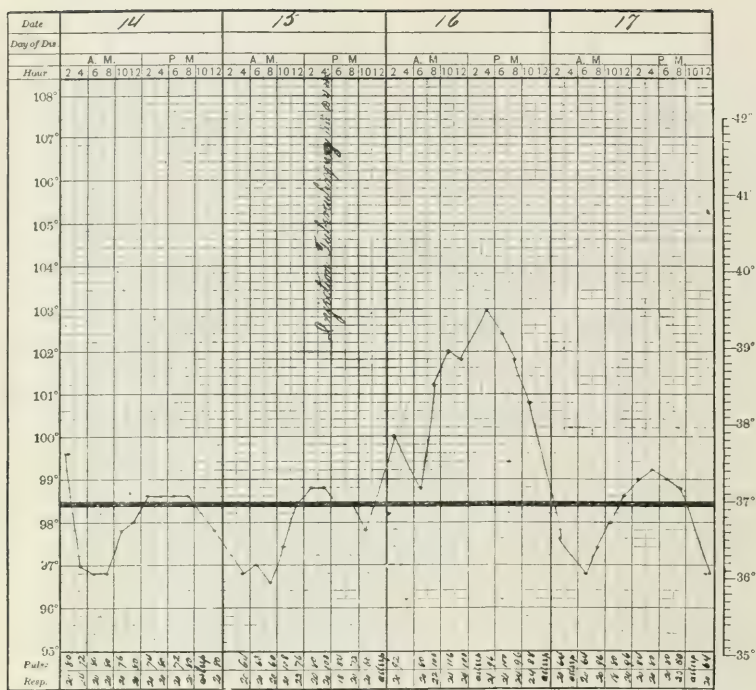


CHART II.





MINIM

CHART III.

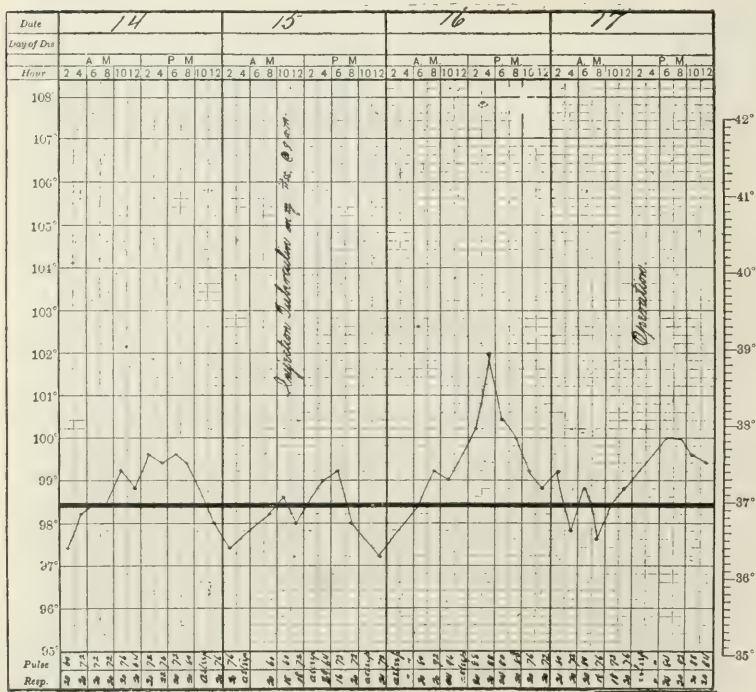


CHART IV.

## TRAUMATIC VENTRAL HERNIA.

BY

J. ALEX. HUTCHISON, M.D.,

Surgeon to the Montreal General Hospital; Lecturer in Clinical Surgery, McGill University.

On November 24th, 1899, A. F., 16 years of age, was admitted to the Montreal General Hospital, suffering from the effects of an injury to the abdomen, the result of being struck by the pole of a wagon.

Examination. The patient was a well nourished lad of good muscular development. He complained of pain in the abdomen. Pulse and temperature normal; no signs of collapse or other evidence of serious injury.

On inspection of the abdomen there was seen a small superficial abrasion close to and above the anterior superior spine of the ilium.

In the recumbent posture during tranquil respiratory action the abdomen appeared normal; on deep inspiration a small cone-shaped prominence appeared slightly above and internal to "McBurney's point".

The tumour was tympanitic and easily reduced, the little finger readily passing into a definite opening in the muscles.

There was some general tenderness in the right iliac region. After an observation of three days, during which time no symptoms developed, under ether anæsthesia I made a longitudinal incision through the skin and subcutaneous tissues, four inches in length and having its centre opposite the apparent rupture in the muscles.

It was then seen that the rupture involved all the muscles and the peritoneum. The tear in the muscles was somewhat semilunar in shape, involving the external and internal abdominal oblique and transversalis, about three and a half inches long, with a marked retraction of the cut lower border of the internal oblique, through which the small intestine was seen. The laceration in the peritoneum followed, in a general way, the direction of the tear in the muscles, and was about two and a half inches in length. There is no evidence of injury to the abdominal viscera. The wound was closed in layers in the usual manner, catgut for the deep parts and silkworm gut for the skin. Recovery was uneventful.

After a careful search through the literature bearing on injuries of

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\* Read at the meeting of the Canadian Medical Association, Winnipeg, August 28, 1901.

Of its nature I have failed to find a record of a similar case. Pick says laceration of the parietal peritoneum without injury to the viscera is comparatively rare, Da Costa, that the peritoneum may be ruptured even when there is no visceral injury or muscular contusion. In Pick's Surgery, page 891, there is an illustration very similar to mine, the text explaining that the hernia was through the belly of the rectus. No reference is made to the condition of the peritoneum.

The following points, in the case related, are of interest:—

The absence of any evidence of injury to the skin over the hernia.

The extensive laceration of the thickest and strongest parts of the oblique muscles.

Laceration of the underlying peritoneum without injury to the viscera.

No collapse immediately following the accident or subsequent development of localized peritonitis.

The absence of extravasation of blood to any extent in the space formed by the retraction of the torn edges.

The importance of carefully examining the injured parts by operation, without which, in all probability a very large hernia would have in time developed.

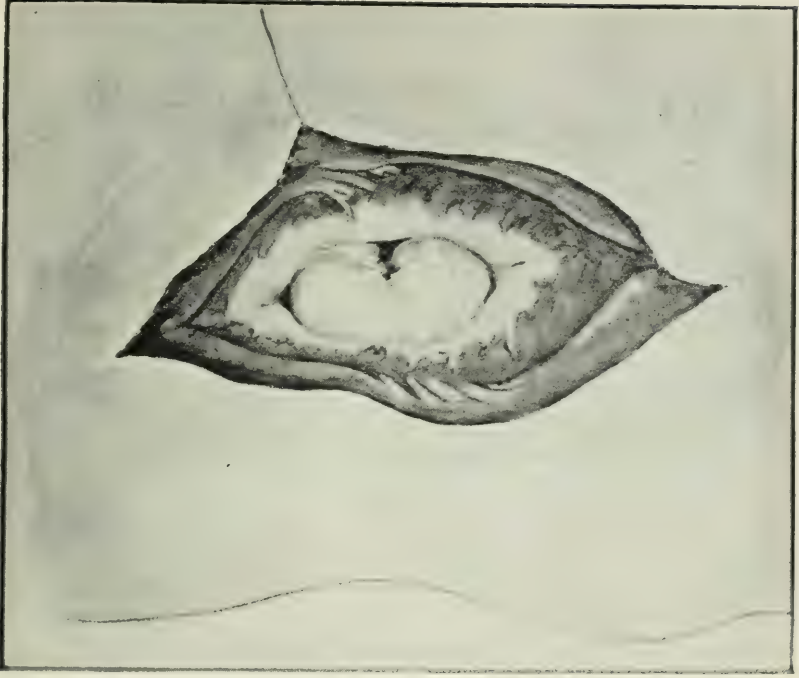
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Modern Surgery (Da Costa), page 761.

#### ILLUSTRATIONS.

By Dr. R. Tait McKenzie from a sketch taken at the operation by one of my class, Dr. Lorne Robertson.







## A FATAL CASE OF ILEO-COLIC INTUSSUSCEPTION.

BY

E. REAVLEY, M.D., Silverton, Colorado.

W. R., male, aged six months, weighing 13 pounds, and well nourished, had never been ill except with constipation for four months just before the present illness.

On *July 23, 1901*, he was taken ill early in the morning, and at 8 a.m. vomited and screamed with pain. At 9 a.m. he passed bloody mucus by stool. As the parents lived nine miles out of town, I did not see the case until 1.30 p.m., when the vomiting was occurring every fifteen or twenty minutes, and stools containing bloody mucus were being passed at about the same intervals. Pulse, 132; temperature, 98° F. A tumour was felt in the line of the colon and in the rectum.

After giving chloroform, the patient was inverted and the intussusception was quickly reduced by a hydrostatic pressure of thirty inches and external manipulation of the bowel. The parents were then warned of the possibility of return of the condition and of the necessity for immediate operation on the slightest symptoms of recurrence.

On *July 30th*, I was again called to the child and told that he had been as well as usual until 8.30 that morning when the former symptoms had returned in an aggravated form. A tumour was now felt at the anus; it was firm and tense, and bled at the slightest touch. Under chloroform, hydrostatic pressure failed to entirely reduce it, and the parents agreed to take the baby to town and permit of immediate operation. However, on their arrival, a confrère was called in and he succeeded in frightening the parents so much regarding the operation that they refused to have it undertaken.

*July 31st.* The tumour protrudes through the anus at times; vomiting is almost constant and all food is vomited as soon as taken. The pulse varies, 132 and upwards; temperature 98°. Condition rapidly ingravescens. At 11 p.m. the patient's father called and said that the baby "was failing rapidly and would not live until morning." He consented to the formation of a faecal fistula, should it prove necessary, but refused to allow a resection. On calling, I found the baby extremely pale, perspiring, lips livid, eyes sunken and surrounded by dark

circles. The vomit was greenish and coffee-grounds in colour ; pulse 140 to 143, very weak.

On *August 1st*, at 1.45 a.m., I opened the abdomen under great difficulty from defective light, etc. The appendix vermiformis was normal in size and position, the cæcum very much distended, tense, firm, and two inches in diameter. Reduction was abandoned as it would have involved immediate resection of irreparably damaged gut. The ileum was seized a few inches from the colon, withdrawn, a fæcal fistula formed, and the infant hurried to bed. Vomiting ceased almost immediately. During the forenoon water was given at frequent intervals and the baby was permitted to nurse in the afternoon. Pulse 132, improved.

*August 2nd.* Improving, no vomiting, nurses eagerly. Takes beef juice well, strength much increased.

*August 3rd.* Eczema of the skin near the fistula has appeared, as it has been impossible to completely prevent escape of fæces. The principal efforts were now directed to cure the eczema, in order that the operation might be completed, but it proved rebellious to treatment, becoming almost well one day to relapse the next.

*August 5th.* The condition varies very little. Septic absorption from the disintegrating intussusception was prevented by flushing the colon.

*August 10th.* The condition is becoming marked. Larger fragments of intestine are brought away when irrigating the colon. Eczema is improving.

*August 14th.* Yesterday patient vomited several times. To-day the appetite is better ; pulse, 132.

*August 18th.* Patient improved steadily until to-day, when there are symptoms of catarrh of the stomach with frequent vomiting. Pulse, 140. Eczema still present.

*August 21st.* Instruments sterilized to complete operation, but the condition became so alarming in the early afternoon that it was necessary to abandon it.

*August 23rd.* The baby became gradually weaker and died of asthenia to-day. Early reduction by operation either on the 23rd or 30th of July would undoubtedly have saved its life.

Should it ever be my misfortune to have another case where reduction was impossible or inadmissible from necrotic condition of gut, and where the patient's condition would not permit of immediate resection of intestine, I would open the colon, reduce as much of the ileum as its condition would permit, then suture the ileum to the abdominal wall and open it also. Then at any convenient time the ileum could

be cut away and Maunsell's operation be performed through the faecal fistula in the colon.

The only object in reporting such a case is the duty of publishing failures as well as successful cases. In the somewhat limited literature at my command faecal fistulas show a mortality of about 84 per cent., though the direct cause of death is not stated, so the reports are almost valueless. I feel that had I made a fistula in the colon and then in the ileum, and one or three days later performed Maunsell's operation, I firmly believe that the baby would have recovered, for increase in invagination could have been prevented by passing a soft rubber catheter into the ileum, and by administration of very small doses of opium to prevent excessive peristalsis.



## DERMATITIS HERPETIFORMIS.

BY

J. LESLIE FOLEY, M.D., L.R.C.P.,

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According to Duhring, herpes gestationis, the name by which this dermatosis was formerly labelled, should be classed as a dermatitis herpetiformis. These cases are sufficiently rare to be placed on record.

On July 2, 1901, Mrs. D., æt. 39 years, consulted me about a severe dermatosis covering almost the entire body. Patient is a strong, fleshy, well-developed individual of a neurotic temperament. She was born in the United States and has been in the habit of drinking beer. She has had nine pregnancies, each pregnancy being accompanied with the eruption. In the intervals she is free from any cutaneous disease. The eruption is distributed over the upper and lower extremities and on the abdomen. The initial lesions consist of papules and vesicles. These are arranged in circles. Patient complains of intense pruritus. Over the genital regions the papules and vesicles have coalesced, giving rise to an appearance resembling eczema intertrigo, which is extremely irritable.

Patient complained of puritus vulvæ, for which I ordered an ointment consisting of Ichthyol, m xxv; Zinci carb., 3i; Zinci oxidi, 3i; Ungt. simplicis, ad 5i, which she said relieved her.

There is no history of cutaneous disease in the family. I did not have an opportunity of examining the urine or the blood for eosinophilia.

The treatment adopted in this case was as follows:—Patient was six months advanced in pregnancy. Owing to her condition I did not order liquor arsenicalis but instead gave her an alkaline bitter tonic and the following lotion. Liq. carbonic detergens, 3i Lotio Calamine ad 5 vi. Sig. To be applied night and morning. This relieved her very much. I had intended having a photograph of the dermatosis taken but a few days afterwards, when she again presented herself at my clinic, the eruption was so improved and modified by the treatment that it had lost its typical character.

Four years ago I remember seeing a similar case at the Woman's Hospital under the late lamented Dr. Kennedy.

## SPUTUM EXAMINATION IN PULMONARY TUBERCULOSIS AND ITS PROGNOSTIC VALUE.

BY

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### *Macroscopical Examination.*

Pulmonary tuberculosis has no characteristic form of sputum. As cutaneous syphilis among diseases of the skin, so is pulmonary tuberculosis, as regards its sputum, among diseases of the lung. Both are great imitators. But while the former never perfectly imitates another disease, the latter, owing to complicating organisms, may assume all the characteristics of a second affection.

In quantity the sputum may vary from nothing to 800 cc., and even 1000 cc. in 24 hours.

The colour is usually gray, or greenish gray to yellow, but grass green, yellow, red, brown and black, with intervening shades, have been observed. The more unusual colours have frequently been traced to secondary organisms.

Biermer,<sup>2</sup> in his classic work on the sputum, makes four great divisions—all of which occur in pulmonary tuberculosis:

1. Mucous sputum is the first of these. Pure and watery mucous has its origin more frequently in the upper respiratory tract, but occurs not seldom in pulmonary tuberculosis.

2. His second division of muco-pustular is further subdivided into

- (a) Muco-pustular—homogeneous—a form which was said to occur after the use, in the early days, of Koch's tuberculin.

- (b) Pustulo-mucous—non-homogeneous, nummular or coin-like sputum. This form is held by many to be characteristic of cavitation, though of little value in diagnosis.

3. Pure bloody sputum is Biermer's third division, and

4. Bloody sputum his fourth. This again is subdivided into

- (a) Pure bloody sputum in hæmoptyses, which is never acid unless swallowed and vomited, when it is no longer red.

- (b) Blood tinged.

- (c) Mixed with blood internally, as

- (1) Muco-hæmorrhagic:

- (2) Sero-hæmorrhagic, *e.g.*, in hæmorrhagic diathesis;

- (3) Pustulo-hæmorrhagic.

The consistency of tuberculous sputum varies from watery to sputum so tenacious that the cup may be inverted and no sputum spilled.

In the early stages the sputum has little or no odor, but in certain complications, and occasionally in the later stages, a most marked and at times fearfully offensive odor is present.

The reaction of the sputum is for the most part neutral or alkaline.

Morton<sup>3</sup> and Bayle<sup>4</sup> have each described a form of sputum in tuberculosis, in which numerous calcareous fragments occur. "The size of the fragment varies from a small pea to a large cherry. As a rule a single one is ejected; sometimes large numbers are coughed up in the course of the disease. They are formed in the lung by the calcification of caseous masses, and it is said also in obstructed bronchi. They may come from the bronchial glands by ulceration into the bronchi, and there is a case on record of suffocation in a child from this cause." (Osler).<sup>5</sup>

It may be well to say a few words at this time regarding the prognosis from the macroscopical examination.

A sudden disappearance of sputum where before it had been abundant, especially in the morning, should always put us on our guard. Miliary tuberculosis is occasionally ushered in in this manner. I have recently seen a case where a sudden attack of heart failure caused a cessation of expectoration for one or two days without apparent injury. The absence of sputum is, as is well known, no better sign of the absence of pulmonary tuberculosis than is the absence of cough. All of us have met with cases of acute infiltration, where for one or more months no sputum was available for examination. Traube<sup>6</sup> has called attention to two types of sputum in acute pneumonic phthisis. The sputum in the early stages of the disease is decidedly bloody—pneumonic—in fact, the disease is most frequently and rationally diagnosed pneumonia. However, in a week or ten days no crisis occurs, and the sputum may take on a greenish tinge, and, I may add, tubercle bacilli be found as early as the eleventh day.<sup>7</sup>

An abundant mucoid, more or less frothy sputum at times marks the onset of miliary tuberculosis upon a chronic or less acute form of the disease.

In fibroid tuberculosis of the lungs there may be little or no expectoration, and no bacilli may be found for long periods. When tuberculosis follows chronic bronchitis the expectoration is usually at first of clear viscid glairy mucus. With the advent of softening the sputum becomes muco-purulent and yellow or greenish in colour.

The character of the sputum is no absolute criterion of the presence or absence of the tubercle bacillus. Tubercle bacilli may occur in watery mucoid sputum as well as in the usual muco-pustular variety.

*Microscopical Examination.*

Turning now to the finer examination of the specimen, I should advise that the first step be the staining for tubercle bacilli, by far the most important part of the examination. So important is it, I may add, that many can see nothing more to do.

The sputum, which has been collected in a cup or large-necked bottle, should be poured out into a large Petri's dish, or, better, on a large glass plate, where it can later be examined for elastic fibres. Search should now be made for the rice bodies, "*corpora oryzoidea*," certain opaque, more or less rounded, crumbling masses from cavities, very rich in tubercle bacilli. Similarly appearing bodies come from tonsillar crypts, trachea, bronchi, pharynx, etc., and from food. Failing to find these, bits of pus should be chosen.

Tubercle bacilli may occur by millions in one part of a specimen and be absent from another. To avoid error, some<sup>s</sup> have advocated rendering the sputum homogeneous. The specimen is shaken with two or three times its volume of water, sodium hydrate, etc., until the whole is homogeneous. It may now be examined, set aside in a conical glass to sediment, or, if analysis must be known at once, placed in a centrifuge. A fixing reagent (fluid) must be used with specimens treated in this manner, and while many more elaborate methods are employed, egg albumen answers every requirement. Some have held that treatment with alkalies impairs the staining properties of the tubercle bacillus, but Weyl<sup>9</sup> has shown that while these chemicals extracted a substance from the tubercle bacillus the cell membrane was left, which gave the specific staining reactions. Others affirm, and with some ground, that decolorization is more rapid.

Amann<sup>s</sup> recommends that bits of sputum taken from different parts of the specimen be rendered homogeneous by rubbing them between two glass slides or cover slips. This seems to me to be by far the most practical method for specimens where the number of tubercle bacilli would fall within Gaffky's schema<sup>61</sup> (to be mentioned later).

If no tubercle bacilli can be found by ordinary methods, "homogenization" and sedimentation or centrifugation may be employed.

Javelle water<sup>10</sup> has recently been employed to replace potassium and sodium hydrate as a solvent of sputum. It is claimed that, diluted two or three times, it quickly "cuts" the sputum, and in from fifteen to thirty minutes it is ready for centrifugation or sedimentation. The sediment—2-3 cc.—is treated with 5-6 drops of normal sodium or potassium solution, which combines with the free chlorine to form sodium chloride. Heat is not necessary. Dilute with distilled water and



centrifugate. No fixing reagent need be used. The cellular elements are well seen.

Digestion<sup>11</sup> with pancreatin has recently been much employed. After shaking the specimen with water containing sufficient sodium carbonate to render the whole solution alkaline, a little powdered pancreatin<sup>3</sup> is added, and the specimen put in the thermostat for 6-24 hours. When completed, the specimen is diluted with water, well shaken, and centrifugated. Brieger<sup>12</sup> suggests that in doubtful specimens the sputum for 24 hours be boiled in half per cent. solution of sodium hydrate and then sedimented. If no tubercle bacilli are found by this method in children and in weak adults, the fæces and vomitus should be examined by sedimentation. It is also well to tell the patient that only sputum that has been coughed up should be sent for examination.

To make certain, the sputum of a suspected case should be thoroughly examined on three or four, some say six or seven, successive days.

The final test is, as we all know, the injection of the guinea pig, and the detection of tubercle bacilli in the lesions produced.

Some have claimed<sup>13</sup> that under favourable conditions tubercle bacilli may increase in specimens of sputum. That this may take place in the thermostat cannot be denied, but from the difficulty experienced in getting cultures of the tubercle bacillus to grow under the most favourable conditions—conditions not exactly reproduced in sputum—such a growth would seem to me unlikely. That such an increase ever takes place at temperatures in this latitude I cannot hold.

After the specimen is placed on the cover glass or slide, some care must be exercised in drying, as too high a heat may injure the staining qualities of the tubercle bacillus.

To fix, the cover slip is passed vertically through the flame of a Bunsen burner three times. If a spirit lamp be used this may be done a trifle more slowly, and the same applies to a slide. The oil immersion lenses are all corrected for cover slips, and so, theoretically, it appears better to employ the slips, but practically a slide will give results good enough for any but the microscopist, whose goal is not diagnosis but technique.

### *Staining of the Tubercle Bacillus.*

The so-called staining properties of the tubercle bacillus depend upon its resistance to decolorization. It stains well in most of the basic anilin dyes, though the violet dyes and fuchsin give the best results. Fuchsin is better adapted for diagnostic purposes. It is a brilliant red, makes the bacteria appear broader, retains its red appearance by lamp light, is better for photographic purposes, and less sensitive and more reliable than the violet dyes.

The reaction of the staining fluid may be either acid or alkaline. Koch's original staining fluid was, as you will recall, an alkaline solution of methylene blue, with vesuvin as a counter stain. However, the best results have been obtained by the addition to the staining fluid of anilin or carbolic acid—substances slightly alkaline or almost neutral in reaction. The manner in which these substances act is a mooted point.<sup>14</sup> By different observers they are said to increase the solubility of the stain,<sup>15</sup> to act as a mordant or corrosive.<sup>16</sup> By the first, the tubercle bacillus is more deeply stained on account of the concentration; by the second hypothesis the stain is enabled to penetrate more deeply into the substance of the bacillus.

The time required for staining varies with the degree of heat employed; the greater the heat, to a certain point, the more rapid the staining. The cover slip may be floated on the staining fluid, which is heated in a dish, or, better, immersed in the fluid, as in some staining reagents the composition of the fluid on the surface differs from that of the stain in general. If a slide be used, the whole end should be kept covered with the staining fluid, to prevent the specimen breaking during the heating. A small flame should be used and the fluid brought just to a boil, or, better, until bubbles are seen to collect about the thicker parts of the smear. This heat should be kept up for 1-5 minutes, or until crystals of fuchsin are seen to appear on the surface of the fluid. As many hold that not one-half of the tubercle bacilli in a preparation are stained when it is examined, the great value of sufficiently overstaining is readily seen. Its importance is further seen when we realize that by each successive step the tubercle bacilli are more or less decolorized.

Recently several new stains for the tubercle bacillus have been proposed. Dorset's<sup>17</sup> stain has been acknowledged by its author to be of little or no value in differentiating between smegma and tubercle bacilli. Dr. Dorset, I believe, found only one specimen of dye that acted as described by him. Hodenpyl has tried the stain and found it of no value.

#### *Decolorization.*

The so-called "specific" staining properties of the tubercle bacillus depends chiefly upon its ability to resist decolorization. The word "specific" is misleading, as bacilli of smegma and leprosy, have a certain degree of the same "specificity" but are less able to resist acid and alcohol.

Alkalies, other dyes, salts and alcohol, as well as acids, organic and inorganic, can decolorize specimens. Of the three most commonly used, inorganic acids, nitric, which has no specific action, is the safest. But care must be used to obtain only chemically pure acid, as nitrous acid

decolorizes tubercle bacilli quickly. Sulphuric acid however, undergoes no change when in watery solutions, and one can be more sure of its strength after standing. Concentrated acid acts no better, but more quickly than moderately dilute, 1 to 2-4. Acid alcohol (Ebner's decalcifying fluid) is very good, and recently Rosenberger<sup>18</sup> has advised the use of sweet spirits of nitre, an alcoholic solution of ethyl nitrite, as a decolorizing agent for the ordinary carbol-fuchsin stain. After staining 5-10 minutes in this, the specimen is decolorized  $\frac{1}{2}$  minute in the spirits of nitrous ether, and counterstained. Smegma bacilli as well as the fatty granular particles decolorize in this. The author claims it does not injure tissue as sulphuric acid does at times; it is easy to prepare; keeps indefinitely; acts more quickly and surely than ordinary decolorizers, and gives a clearer and better defined field. By its use much thicker preparations can be used, and so more sputum examined at one time, an advantage of no little importance where the tubercle bacilli are few. It has been tried in the laboratory and gave satisfaction in this respect. I should add that a counterstain may be added to the decolorizing fluid.

Hauser<sup>19</sup> and Lafforgue<sup>20</sup> advocate that a very thin preparation be stained for 30 seconds after steady vapour is given off, care being taken not to allow the specimen to boil or to dry. The specimen is then decolorized in 10 per cent. citric, tartaric, or acetic acid for about  $\frac{1}{2}$  minute, until it assumes a light rose tint. Wash very rapidly with alcohol and water, and counterstain with methylene blue. Hauser says one can combine acid with alcohol and employ but a few seconds.

The thinner the smear the more quickly is the specimen decolorized. By changing the part of the decolorizing fluid in contact with the specimen the action is hastened. Gabbett's<sup>21</sup> mixture of methylene blue in 25 per cent. sulphuric acid has, I believe, from its general use, given the most satisfaction in ordinary work. Many, however, still prefer to decolorize by nitric acid until the specimen shows no traces of fuchsin. It is then washed in water, when possibly some colour returns, and it may be necessary to decolorize further. The specimen is then washed with alcohol, next with water, and then treated with the counterstain. I have found this method to be the best in specimens for diagnosis, and for urine. The fewer the tubercle bacilli the more carefully must the decolorization be made. A few tubercle bacilli may be placed on the slide and stained and decolorized at the same time, as a control.

I have already mentioned several methods of counterstaining, among them the one most frequently used, Gabbett's<sup>21</sup> method, which decolorizes and counterstains at the same time. B. Frankel<sup>22</sup> and von Ermengem<sup>23</sup> have both methods on this principle, and Rosenberger<sup>18</sup> has added it as a modification to his method of decolorizing by sweet spirits of nitre.

With these we cannot control the steps as well as with the separate method. A good counterstain must be strongly contrasting to that used for tubercle bacilli; it must have affinity for the ground matter to drive out the first stain and be able to recolor; it must stain the secondary organisms; it must not decolorize the tubercle bacillus too powerfully. Vesuvin has proved a good counterstain for violet-coloured tubercle bacilli, and methylene blue or malachite green for red.

Gibbes<sup>24</sup> method of polychromatic staining has proved of small value. Its author claimed for it results similar to those obtained in the blood by Ehrlich with his triple stain.

To recapitulate briefly: be sure to overstain. As soon as the stain is washed off, remember that each step affects more or less the colouring of the tubercle bacillus. So decolorize and counterstain with great care.

To dry the preparation after counterstaining, blotting paper may be used, but a new piece should be employed for each specimen, and care taken that it is as clean as possible. Personally, I prefer to allow the preparation to dry in the sun. Heating for this purpose I have found to injure the stain.

#### *The Tubercle Bacillus.*

"The tubercle bacillus," writes Fischel,<sup>25</sup> "is not an end form, but one form of the cycle of a rod-shaped bacterium." It is without doubt due to this fact, confirmed by many observers, that the following names have been suggested for the tubercle bacillus: *Sclerothrix Kochii*,<sup>26</sup> *Mycobacterium tuberculosis*,<sup>27</sup> *Tuberculomyces*.<sup>28</sup> But according to the rules of scientific nomenclature this name cannot be changed, and as it is binomial, the only loophole is closed.

The tubercle bacillus most usually occurs as a rod-shaped organism 1.5-3.5 microns long, and about 0.2 microns in breadth. It has been seen 11 microns long. The shorter the bacillus the more apt is it to be straight. It is usually bent, sometimes curved, crescentic, or even like a spirillum or spirochæta. It occurs at times in chains, and branching forms have been recorded by a number of observers.<sup>29</sup> One observer<sup>30</sup> has recently reported two cases where branched forms have occurred in the sputum, which he further characterized as filamentous, budded, or beaded. In one case he obtained the same forms from guinea pigs after inoculation. Pleomorphic forms have also been found in tissue. Hoenpfl holds with Metschnikoff that the tubercle bacillus is a cladothrix.

The beaded forms have caused much discussion. Koch, in his early papers, held the clear refracting spaces to be spores, and many have followed his lead. They occur 1 to 8 in a bacillus, and are separated in stained specimens by round or rod-shaped granules deeply stained in a lightly-stained capsule. The clear spaces are now held to be vacuoles



due to plasmolysis. Every observer has noted "nucleated" tubercle bacilli, *i.e.*, bacilli containing more deeply stained rounded masses. These resist decolorization more strongly than the remainder of the bacillus, and at times resemble short chains of cocci. This is the explanation of the affirmation made by some that tubercle bacilli may become cocci.<sup>31</sup> That these, too, are not spores, is upheld by the fact that they have not been shown to resist drying and disinfection to any greater degree than the bacillus, nor have they ever been shown to germinate.

The club or knob-shaped swellings at the end of the tubercle bacillus in some specimens are asserted by Coppen Jones<sup>28</sup> to be spores. This observer would place the tubercle bacillus very near the actinomyces, which reproduces itself in this manner. But it is much more likely that this form, with the two preceding, are all types of degeneration.

The morphology of the type of tubercle bacillus of Arloing and Courmont<sup>64</sup> that is capable of agglutinating, has not, as far as I can learn, been studied.

#### *Arrangement and Grouping of the Tubercle Bacillus.*

The arrangement of the tubercle bacillus in any specimen cannot be told from what is found in a single slide. They occur often in clumps, often diffusely scattered throughout the specimen. At times they occur in groups of two, three, or four, with their long axes more or less parallel. Occasionally they are found to be intracellular, in leucocytes or alveolar cells. Very occasionally they occur in enormous masses, such as are found in smears from cultures.

Fischel's<sup>25</sup> conclusions in his paper on the morphology of the tubercle bacillus are in part as follows:

(1) "The tubercle bacillus recognized by Koch as the cause of tuberculosis is a parasitic form of a rod-forming micro-organism occurring originally as a saprophyte. That, in the examination of tuberculosis cultures, stained and unstained rod-like organisms only are found for the most part, is due to the preparation. Bacilli, leaving each other at an angle, often observed in stained preparations, may be an indication of the original branched forms.

(2) "The form of this organism cannot yet be surely determined. It is no bacillus in the morphological sense, no cladothrix, but in its saprophytic form evidently belongs to a higher pleomorphic fungus. The similarity to the actinomyces, present in fact in the macroscopic form, as well as the fact that the forms observed in cultures of tubercle bacilli were found also in cultures of actinomyces, bespeaks a somewhat near relationship between these two organisms.

(3) "The parasitic forms of growth vary after the substrata in the

sense that the so-called bacilli appear sometimes longer, sometimes shorter, sometimes narrower, sometimes broader.

(4) "The bacilli of fowl tuberculosis stand in such genetic relationship to mammalian tuberculosis that they appear as modifications of one and the same organism, due to the nourishment. The bacilli of miliary tuberculosis, bovine and fowl tuberculosis, can, according to this, already be somewhat differentiated. The bacillus of fowl tuberculosis has lost in general, through the pabulum on which it has been grown, the peculiarity which transfers it to mammals, to produce the same general tuberculosis. However, it can again attain this peculiarity under certain conditions not exactly known at the present time.

(5) "The cause of tuberculosis is a pleomorphic and variable micro-organism."

Smegma, syphilis, and leprosy bacilli all stain in carbolfuchsin and resist acid to some extent. Smegma bacilli are decolorized by acid and alcohol. Leprosy bacilli<sup>32</sup> stain much more quickly than tubercle bacilli and retain the stain less persistently. Cowie<sup>33</sup> has recently shown that most of the laboratory and domestic animals possess smegma bacilli, and he holds that smegma bacilli are not of one but of several species.

Stiles and Hassell<sup>34</sup> have recently called attention to the fact that in Cincinnati a number of hogs have been found infected with the lung fluke, *Paragonimus Westermanii*. They were identical with those found by Mauser in man. The bearing of this upon cases of pulmonary disease beginning with hæmoptysis is readily seen. The sputum in these cases, raised between the hæmoptyses, is very similar to that of pneumonia, and is of a dirty red or brown color, due to the presence of the eggs. These are the only constant and specific characteristic of the disease and are usually very numerous.

The acid resisting bacillus of timothy hay<sup>35</sup> has been found to occur frequently in butter and milk. Rabinowitsch thinks many of the "tubercle bacilli" found in butter are this organism. It is immotile, generally occurs singly, often slightly curved, but may be found with parallel arrangement. At times long imbranched threads are found; at others, short pieces. They are thicker than tubercle bacilli and may have a swelling, club-shaped, on one end. They contain no spores, but one part of the bacillus is often more deeply stained than the rest. A weak watery solution of methylene blue stains the whole bacillus, while the tubercle bacillus is stained only at one part. While it resists sulphuric acid, it decolorizes in nitric acid and alcohol.

Klein,<sup>36</sup> in 1899, reported a bacillus of pseudo-tuberculosis which occurred in water and milk. It was pathogenic to animals, which, however, could be immunized. He states that it may occur in man.

Kempner,<sup>37</sup> and his wife report a pseudo-tubercle bacillus in sputum, and on post-mortem examination, in a case of pulmonary gangrene.

Eppinger<sup>38</sup> has reported a cladothrix (*C. asterioides*, he called it) which produced in the lungs a disease similar in its lesions to tuberculosis. On inoculation into guinea pigs and rabbits the similarity to tuberculosis was also maintained.

Flexner,<sup>39</sup> in 1897, found an organism which reproduced in the lung all the macroscopic changes found in tuberculosis. No tubercle bacilli were present, but a streptothrix pseudo-tuberculosis was isolated as the cause.

Rixford and Gilchrist<sup>40</sup> reported a case in 1896, of protozoan infection, in which, though no tubercle bacilli were found in the sputum, the patient was thought to have died of general tuberculosis. Enormous quantities of protozoa were found on section in the contents of the pulmonary cavities.

Renon,<sup>41</sup> in his monograph on aspergillomycosis, has shown that *aspergillus fumigatus* may cause all the symptoms and physical signs of pulmonary tuberculosis. The sputum in these cases, which are rare, is at first frothy, but soon becomes greenish and purulent, often streaked with blood. Such a case, with marked lesion at one apex, would almost certainly be diagnosed pulmonary tuberculosis without an examination of the sputum, a thing which has happened. The fact that it may occur with tuberculosis of the lungs but emphasizes the point that the examination of the sputum should not be considered completed as soon as tubercle bacilli are found.

The sputum of actinomycosis may be simple mucous or purulent, and if so, may contain the sulphur yellow granules. It may be at times rusty like that of pneumonia, or the patient may say that at one time a large quantity of offensive yellow material was expectorated. The physical signs and symptoms may closely resemble those of pulmonary tuberculosis, but the radiating arrangement of the mycelium is distinctive.

#### *The Cellular Elements.*

These compose the great mass of the sputum and should be examined in the fresh specimen. If two cover slips or slides are rubbed together, one may be stained for tubercle bacilli, the other examined fresh after a little more sputum is added. Gabritschewsky<sup>42</sup> of Moscow has, following Schmidt's<sup>64</sup> method of hardening sputum and then sectioning and staining, found giant cells in three out of four cases of pulmonary tuberculosis. The cells consist of four or five varieties. It will suffice to name these, pavement epithelium, alveolar, ciliated, glandular, cylindrical, pus, red blood, and giant cells. These cells may also be noted in the stained specimens. From the cellular elements of the sputum we

can draw a few self-evident conclusions in regard to its origin. The cell nuclei are said to assume comet-like forms in acute softening.<sup>43</sup>

### *Secondary Organisms.*

That these complicating microorganisms are not always present in pulmonary sputum has been proved by a number of observers.<sup>44</sup> Some of the best authorities hold that even no secondary organism is needed for cavitation. But, bacteria are always in the mouth, and it is very rare that secondary organisms are not found in the specimens. The secondary bacteria include, among others, cocci, staphylococci, streptococci, diplococci, torulæ, tetrads, sarcinæ, zoogloea, bacilli singly, in chains, and in zoogloea masses. I have seen irregularly staining bacilli that closely resembled diphtheria. Influenza bacilli and Fränkel's diplococcus are found at times, as well as *B. pyocyaneus*, and the dozen or more forms described by Dr. Miller<sup>45</sup> of Berlin as inhabitants of the buccal cavity. I may add that months after an epidemic influenza bacilli may be found in chronic cases with cavitation, and may start up the disease afresh at this late date. The diagnosis of this condition by the culture method, though recommended by many, is uncertain. Tubercle bacilli must be present in the specimen to diagnose a mixed infection. Numerous secondary organisms, says Spengler,<sup>46</sup> occurring in a chronic or sub-acute case, with fever and night sweats, and badly stained tubercle bacilli, indicate a prognosis less unfavourable than if the tubercle bacilli were short or entirely absent.

### *Elastic Tissue.*

Having poured out the sputum on a large glass plate 9 x 9 inches, a second plate 6 x 6 inches is placed on it. The specimen is then examined for opaque bits, and a little practice helps much in avoiding pieces of food. When a suspicious particle is found, the upper glass plate is slipped sufficiently to one side to enable the suspected bit to be "cut out" with a needle and transferred to a slide for examination. If none are found, digest or boil with 5-10 per cent. sodium hydrate or dilute with  $\frac{3}{4}$  volume water and sediment 24 hours or centrifugate.

Some years ago, before the discovery of a diagnostic stain for the tubercle bacillus, this was the most important part of the sputum examination. It is now dropping more and more into the background. Dettweiler's maxim, "Where elastic tissue is, there are also tubercle bacilli. Indeed, the greater the number of fibres, the more numerous the tubercle bacilli," is still held in part, but its converse cannot be affirmed, as many cases contain tubercle bacilli and no elastic fibres.

Elastic fibres are the surest sign of extensive destruction of pulmonary, bronchial, or tracheal tissue. The bronchial elastic tissue, accord-



ing to Osler,<sup>5</sup> forms an elongated network, or two or three long narrow fibres are found close together. By others they are said to be more fragmentary and less apt to be curled. A somewhat similar form is said to come from the arteries, and occasionally a "distinct sheeting is found, as if it had come from the intima of a good-sized artery" (Osler).<sup>5</sup> The fibres from the alveoli are often branched, and show the outline of the air-cells. In healing processes the elastic fibres first become scarce and finally disappear. Their constant presence shows advancing disease. They are absent in acute processes until the walls of the bronchi are broken down. Ninety per cent. of all cases in which elastic tissue occurs are said to be tuberculosis.

Various crystals<sup>47</sup> may be found in tuberculous sputum, and among them may be mentioned Charcot-Leyden crystals—so abundant in asthma—cholesterin crystals, hæmatoidin crystals, fatty crystals. •

Fibrinous coagula,<sup>48</sup> striking, tree-like bodies, may occur in phthisis as well as in fibrinous bronchitis. Casts of the bronchi also occur.

#### *Prognosis from the Sputum.*

In any examination of the sputum the question of chief importance is the presence, and, with many reservations, the absence of tubercle bacilli. At the very beginning it is well to impress upon our minds that the number, form, arrangement and staining of the tubercle bacillus give no perfectly sure data for prognosis.

How often do we hear on all sides that a patient is improving because he has fewer bacilli in his sputum. When we recall that only a fraction of the number of bacilli in any preparation appear stained when it is examined; that old foci may give off very few, and young foci no bacilli at all, however actively they are forming; that the occlusion of a bronchus may shut off the focus entirely for a time: when we consider these things we see how little can be drawn from the number of bacilli present in any preparation. And again, as cultures up to 10-14 days are said by Marmorek<sup>49</sup> not to hold the stain, we see a further chance of error. A negative examination, it has been urged, is of little value unless extended over at least 4-6 successive days. Repeated negative examinations of the sputum are important in differentiating bronchiectatic dilatation<sup>50</sup> from cavitation, and in perforative empyema. Tuberculous foci, however, may be present in these cases. I saw last spring, in Dr. Osler's service at the Johns Hopkins Hospital, a negro, aged 32, who was admitted as a case of pneumonia. The number of his leucocytes per cu. mm. never reached 12,000. About the tenth day, no crisis having occurred, his expectoration was examined for tubercle bacilli, with a negative result. However, they were found on the twelfth day and the diagnosis changed to tubercular pneumonia. The dulness over the left

lower lobe persisted, and about the fifty-fifth day of the disease, if I remember correctly, the empyema discharged through an intercostal space. Tubercle bacilli had in the meantime disappeared from the sputum, and the last time I saw the patient in the surgical ward he was doing very well. Such cases should again warn us against concluding that if tubercle bacilli are found, the diagnosis is completed.

Ferran<sup>51</sup> of Barcelona has recently described a test to be employed when no tubercle bacilli are discovered. Three or four cc. of sputum are sterilized, 10 cc. sheep's serum added, and the whole placed in the thermostat for 3-6 hours. At this time the odor of spermin may be detected. It is said to be formed in cavities by a saprophytic form of tubercle bacilli.

The point frequently arises whether a single typical tubercle bacillus is sufficient for diagnosis. While it is no longer necessary to depend entirely upon sputum examination for a confirmation of our diagnosis, I should hardly think it necessary to give tuberculin to a suspected case whose sputum, on very careful examination, showed one perfectly typical bacillus, and this in spite of Straus<sup>52</sup> work. The chief danger here lies for the tyro, who is far less apt to overlook bacilli than to mistake detritus, etc., for them. B. Fränkel<sup>53</sup> showed many years ago that from the number of bacilli in the sputum we could draw no conclusions in regards the number in the tissues. Enormous quantities of tubercle bacilli may be given off from an encapsulated cavity in an arrested case. Another case, who suddenly has high fever, night sweats, etc., may show almost no bacilli, or, if a bronchus be blocked, entire absence of bacilli, and yet go quickly "*zu Grunde*." In the usual course of chronic phthisis the number of bacilli would increase if the process of destruction spreads, and decrease if there is healing, but with many exceptions, notably the one just mentioned. A sudden increase in tubercle bacilli, which before were absent, especially if they are very numerous and diffuse, while the cellular elements in great part show signs of disintegration, bespeaks a very ominous prognosis and is usually accompanied with increased subjective and objective signs. A continuous expectoration of very many bacilli shows, according to Brieger,<sup>12</sup> the presence of a cavity. He further holds that many and very few bacilli at intervals indicate a cavity that opens from time to time. This is very interesting in connection with the clinical observation that signs of cavity may be present one day and absent a few days later.

The absence of tubercle bacilli in the sputum is the *conditio sine qua non* of healed tuberculosis, for as Dettweiler<sup>54</sup> says, of what value would be the long-held maxim that the tubercle bacillus is the cause of tuberculosis, and where the tubercle bacillus is, there is tuberculosis; of

what value otherwise, he says, would this be. The continued presence of bacilli in the sputum does not necessarily mean that the disease is in active progress. Dr. Fowler<sup>55</sup> reported a case in 1895 where bacilli had been found on every examination for fourteen years. During that period the patient was actively at work, and was, at the time of the report, better than he was in 1882. Dr. Trudeau has had a somewhat similar experience, tubercle bacilli being found for ten years, the greater part of which the patient spent in active work.

In regard to the number of bacilli, I would like to urge more uniformity in recording our examinations. "Many," "few," "numerous," are loose terms. But you will reply that they are used in recording "loose" observations, as the examination of sputum must more or less always be. Stroschein<sup>56</sup> of Göbersdorf, Amann<sup>57</sup> of Davos, and Nuttall<sup>13</sup> of Cambridge have devised methods to overcome the uneven distribution of the tubercle bacilli, a point which everyone has recognized. The results thus obtained are not in my opinion of sufficient value to make any of these processes worth while. Gaffky<sup>57</sup> has prepared a table which, with a few modifications, I have used for some months and found very helpful. In it he indicates the number of bacilli by Roman numerals, as follows :—

- I Only 1-4 bacilli in whole preparation.
- II Only 1 bacillus on average in many fields.
- III Only 1 bacillus on average in each field.
- IV 2-3 bacilli on average in each field.
- V 4-6 bacilli on average in each field.
- VI 7-12 bacilli on average in each field.
- VII Fairly numerous on average in each field.
- VIII Numerous on average in many fields.
- IX Very numerous on average in many fields.
- X Enormous masses on average in many fields.

The modifications I have adopted consist in replacing "fairly numerous" by "13-25"; "numerous" by "about 50"; "very numerous" by "about 100." In using this table, Gaffky recommends that a Zeiss homogeneous oil immersion 1-12, and a No. 2 ocular at a definite tube length, be employed.

Spengler<sup>11</sup> of Davos, in a recent article, gives a scheme which he has found of service in recording sputum examinations :—

- T.B. he uses for tubercle bacilli.
- S.B. for secondary bacteria.
- B.B. accompanying bacteria.
- M.B. mixed bacteria.

0-1 very few bacilli (in singly occurring, T.B.1 is used).

1-2 fairly numerous.

T.B.2 numerous (about 12 to the field).

T.B.3 in great masses.

3- in enormous masses.

As a further refinement he employs "2-3<sub>25</sub>" to indicate very numerous and 25 to the field. For daily use he recommends "present" under 12, and "numerous" over 12 to the field.

Gaffky's scheme has the advantage of being almost universally used abroad, where in many places the patients, after the bi-weekly sputum examination, inquire of a friend what number he got, and I may add that the error of "the greater the number the worse the prognosis" is rife among them.

That the form of the bacillus has more bearing than their number upon the prognosis is pretty widely accepted. The chief difficulty lies in the fact that it is very rare to find, after the examination of several slips, that the bacilli have all one form. However, from our knowledge of other bacteria, and from the tubercle bacilli in pure cultures, we may safely conclude that short bacilli indicate rapid growth, and long bacilli slow proliferation. Short bacilli occur, it is said, in young cultures and in chronic cases. Most frequently both forms occur together. A tubercle bacillus of low virulence recently reported by Theobald Smith<sup>58</sup> is said to have been "quite slender, with its chromatic substance more or less transversely segmented." I have previously mentioned that the beaded forms of the tubercle bacillus indicated a degeneration of the organism. Many of the tubercle bacilli found in the sputum are undoubtedly dead, but how to determine this point is unsolved.

The arrangement of the bacilli has been carefully noted by many observers. The occurrence in clumps, and the parallel arrangement of many, or even two bacilli, is said to evidence a favourable state of development and lively growth. Groups of short bacilli are held by some to betoken a bad prognosis.

Very deep staining is in general, according to Spengler, a sign of especial virulence.

In conclusion, I should like to add that the exceptions to what I have said on prognosis are so numerous and so weighty that we may apply with especial emphasis to this branch of medicine the words of Hippocrates, "Experience is fallacious and judgment difficult."

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# RETROSPECT OF CURRENT LITERATURE.

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## Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

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### **Frequency of Recurrence of Sarcoma.**

JOHN A. WYETH. "Frequency of Recurrence of Sarcoma." *Annals of Surgery*, Sept., 1901.

The surgeon of large experience cannot fail to be impressed with the extremely malignant character of sarcoma as shown by the frequent recurrence of this neoplasm, either locally or remotely. This is true whether the tumour is removed by dissection without amputation, or when an amputation is made more or less remote from the growth. The writer states that in his own practice, he can now recall but two cases which in strict propriety can be claimed as cured. He has a number of patients still surviving, one in the fourth year after a hip-joint amputation with no sign of recurrence; but he can hardly count this man as cured, for he has under his observation, also, a man whose shoulder-joint he amputated five years ago for an osteo-sarcoma of the upper end of the humerus, but which five months ago recurred in the stump. While engaged in collecting the cases in which amputation at the hip-joint had been performed by his method, the writer was impressed with the frequency of the recurrence of sarcomata in the lungs or other viscera, and occasionally in the stump, even when the disease was seemingly entirely confined to the bone and well removed from the line of incision in forming the flaps. Out of the 267 cases of amputation at the hip by this method there were 131 done on account of sarcoma, 14 of these, or 10.6 per cent., ended fatally, wholly or in part as a result of the operation. Of the 117 cases which survived operation, more or less satisfactory histories were obtained of eighty-three. Fifty-two of these, or over 63 per cent., ended fatally by recurrence. If, however, a careful analysis of the cases in which the disease returned is made, it is evident that this estimate of the ratio of recurrence is far too low, for in many of the cases classed in the non-recurring list so short a period of time had elapsed

since the operation, that judging by the statistics in the recurring tables, the large majority of these will without doubt ultimately be added to the list of fatalities. Of the fifty-one recurring cases, twenty-seven returned between one month and twelve months after amputation, while in five out of the twenty-nine cases reported as not having recurred when last heard from, only three, four, six, eight, and twelve months respectively had elapsed since the operation. The following summary gives the location of the recurring neoplasm: Lung, 23; lung and brain, 1; lung and pleura, 1; lung and abdomen, 1; pleura, 2; abdominal viscera, 3; liver, 1; abdomen and chest, 1; stump, 10; stump and mesenteric glands, 1; stump and general metastasis, 1; stump and iliac fossa, 1; lymphatic just above Poupart's ligament, 1; sacro-iliac synchondrosis, 1; location not given, 4; apoplexy, 1; total, 53.

As a ray of hope for these cases, the author cites four cases of extensive sarcoma successfully treated by infecting the amputation wound with pyogenic organisms, and he believes that the only case in which he has even done amputation through the shoulder joint for sarcoma in which the patient survived longer than a year, the man's life was prolonged by the streptococcus infection; and that the only one of his five hip-joint amputations for sarcoma which survived over a year, and which still survives three years after the operation, was permitted to become thoroughly infected with pyogenic organisms by leaving a large portion of the wound open and packing it with loose gauze. He has no doubt that streptococcus toxæmia, either erysipelatous or pyogenic, has an inhibitory influence upon sarcomata; and since, almost without exception, in cases not subjected to this infection, recurrence is the rule, it should be practiced whether or not the case is operable; and when an extirpation or complete removal in the part involved by amputation has been made, infection should be induced, and repeated at intervals not longer than six months for at least six years after the operation.

#### **Injuries to the Diaphragm by Puncture.**

CARL SCHLATTER. "Two Cases of Injury to the Diaphragm by Puncture, successfully Treated by Suturing. Transdiaphragmatic Suture of the Liver and Kidney. *American Medicine*, Aug. 31, 1901; and *Münch. med. Woch.*

The diagnosis of injury to the diaphragm is a very easy matter in cases in which the wound can be seen or felt, or when prolapse of the intestine occurs; but in other cases, it is, at best, extremely difficult, and almost impossible without enlarging the outer wound. Symptoms due to conditions accompanying injury to the diaphragm, such as diaphragmatic hernia, vomiting, percutory and auscultatory phenomena, are the exception. Statistics show that when not operated upon, 87.8 per cent.



of the cases died, mostly from the incarceration of the prolapsed intestine; but of the operative cases only 12 per cent. died, and these within a few hours after operation. These figures show the value of immediate operative treatment, and the operator should, in suspicious cases, introduce the well-disinfected finger into the wound and explore the diaphragm, even when to do so an enlargement of the outer wound is necessary.

### **Wounds of the Venous Sinuses of the Brain.**

HENRY R. WHARTON. "Wounds of the Venous Sinuses of the Brain: An Analysis of Seventy Cases. *Annals of Surgery*, July, 1901.

Wounds of the venous sinuses of the brain should be classed as dangerous injuries, being followed by a high mortality, from external or intercranial hæmorrhage or septic infection. They are especially liable to infection, resulting in septic thrombosis and pyæmia, therefore the greatest care should be taken to render them aseptic and preserve them in that condition. The most satisfactory and generally available method of treatment consists in controlling the bleeding by aseptic gauze packing. Ligation of the venous sinuses presents definite dangers in itself, is only available in certain wounds, where a free exposure of the injured sinus is possible, and cannot be employed with advantage in ordinary accidental wounds of the sinuses. The application of a lateral ligature to a wound of a sinus is less difficult and dangerous than ligature of the sinus, but is only applicable to small wounds. Suture of the sinus wounds is a valuable procedure in a certain class of cases, namely, small wounds which can be freely exposed. Forceps pressure is also a ready method of controlling hæmorrhage from wounds of the sinuses, but possesses no distinct advantages over some of the other methods, and its employment is accompanied by certain dangers.

## Ophthalmology.

UNDER THE CHARGE OF F. BULLER.

### Operative Treatment of Corneal Astigmatism.

A. BRENER. "Operative Treatment of Corneal Astigmatism."  
*Lancet*, June 1, 1901.

Brener, with the cautery at a dull red heat, burns the cornea to about half of its depth. The burn is made in the limbus and is punctiform, or there may be more than one of these little wounds. The wound or wounds are situated in the meridian of least refraction, and the result is a marked increase in the refraction of this meridian and a diminution in the meridian at right angles to it.

This treatment is hence limited to cases of hypermetropia and mixed astigmatism. Brener quotes several cases showing very good results.

### Connection between Nasal and Ocular Lesions.

DERRICK T. VAIL. "Optic Neuritis from Intranasal Disease." *Amer. Journ. of Ophthalm.*, May, 1901.

R. SATTLER. "Ocular Expressions of Intranasal Lesions." *Jour. of Amer. Med. Assoc.*, May 18, 1901.

Vail states that acute sinusitis frequently causes acute retrobulbar neuritis, and shows how any dilatation of the sphenoidal sinus by compression, or a purulent inflammation of this sinus by infection, can readily affect the optic nerve, ophthalmic vein, the third, fourth, fifth, and sixth nerves, and the lymphatics of the orbit. He mentions three types of optic neuritis of nasal origin:—

(1) Acute fulminating retrobulbar neuritis due to mechanical compression of the optic nerve and of the ophthalmic divisions of the fifth nerve by the distended walls of the sphenoidal sinus. The symptoms are sudden amaurosis and severe cyclonic neuralgic pain.

(2) Acute retrobulbar perineuritis and leptomeningitis, due to infection by the lymph channels by the nose. There is no pain and less amaurosis than in No. 1, but the fundus presents the same picture.

(3) Retrobulbar optic neuritis secondary to optic venous thrombosis. This is the most common type of the three.

In the first the striking features are the rapid onset and course, the severe pain involving almost all branches of the fifth nerve's first divi-

sion, the rapid loss of vision in a few hours or days with rapid recovery of fair vision in most cases, some atrophy of the nerve ensuing, however, and lastly, the absence in many cases of positive evidence within the nose that the trouble is of nasal origin. The treatment which Vail follows out is to remove all or part of the middle turbinated bones and to endeavour to get into the sphenoidal cavity.

Sattler mentions two groups of nasal lesions, the first consisting of chronic lesions of the middle meatus of the nose, the most anterior cells of the ethmoidal labyrinth, bulla ethmoidalis, the region of the unciniate process, hiatus semilunaris and infundibulum. The morbid change in the nose in these cases although causing such persistent and marked eye phenomena, is often barely indicated by any nasal symptoms and is only discovered when looked for.

The ocular symptoms are persistent injection of the conjunctival vessels, with some œdema of the retrotarsal folds. This injection is generally limited to the ocular conjunctiva. There is no abnormal secretion but much functional distress of the eyes and some slight retraction of the upper eyelid, due to disordered sympathetic innervation.

There may be persistent nagging neuralgia and continued effort at close work produces prolonged suffering, which is most pronounced early in the day but wears off towards evening. The pain is referred to points along the inner wall of the orbit, the eyeball and the eyebrow, which can be easily discovered by palpation. Exposure to bright light, sudden changes of temperature, dusty air, in fact anything which may irritate the nasal mucous membrane externally, as well as irritants of internal origin resulting from excessive mental fatigue, worry, etc., are exciting causes of this persistent suffering referred to the eyes and frontal regions.

The second group includes cases of focal suppuration in the nose—inferior meatus, inferior turbinate—adjacent cells of ethmoid, or often of the maxillary sinus. The ocular lesions are those of the tear sac and duct, often very obstinate, and attended sometimes by caries. The treatment here is radical extirpation of the lachrymal sac and attention to the nasal lesion.

### **Ophthalmia Neonatorum.**

DR. GROENOUW. "Ophthalmia of the New-Born in its Clinical and Bacteriological Aspect." *Archiv. f. Ophthalmologie, Band LII, Heft I.*

FRITZ SCHANZ. "Etiology of Ophthalmia Neonatorum." *Zeitach. f. Augenheilkunde, June, 1901.*

Both of these writers dwell upon the fact that ophthalmia neonatorum is by no means always due to the gonococcus of Neisser.

Groenouw gives an analysis of one hundred cases. Various germs may cause the simple conjunctival catarrh as well as the pronounced blenorrhœa. These germs are gonococci, streptococci, pneumococci, bacillus coli communis and perhaps also the yellow staphylococci. The severe cases were generally due to the gonococcus, but this organism may also cause only a simple catarrh.

In treatment Groenouw did not find protargol superior in its effects to nitrate of silver.

Schanz, in ninety-two cases found the gonococcus in sixty-three; Widmark in one hundred and three cases found the gonococcus in sixty-four; Klopstein in fifty-one cases of severe blenorrhœa found this organism thirty times; and finally, Groenouw in his hundred found the gonococcus in only forty-one cases.

### Corneal Erosions.

VON REUSS. "Corneal Erosions." *Centralblatt f. Augenheilkunde*, Marz, April, 1901.

Reuss mentions those cases of slight erosion of the cornea which, among other causes, are so frequently produced by the scratch of a finger nail. They generally rapidly heal but a few days later on awaking in the morning the patient is seized with marked pain in the eye, which pain disappears after an hour or two only to recur the next morning. Fluorescein reveals no break in the epithelium; and Reuss attributes it to loosening of the epithelium from the substantia propria. The condition may last for weeks or months. At the outstart Von Reuss applies a compress bandage, instilling cocaine for the pain and keeping boracic acid ointment applied beneath the edges of the lids. The bandage is kept on for two weeks and the cure is permanent.

Where a relapsing case is to be treated the epithelium is removed over the site of the erosion so that new epithelium may form, and a compress bandage with boric ointment is used as in the first form of treatment. Fluorescein failing to stain points to the lesion being beneath the epithelium.

### Postpartum Metastatic Panophthalmitis.

W. L. PYLE. "Postpartum Metastatic Panophthalmitis." *Amer. Medicine*, May 11, 1901.

Pyle's article is of the nature of a review of our present knowledge of this disease, with notes of a case of his own.

The time of onset is five to fifteen days after parturition. The monocular cases are twice as frequent as the binocular, and the prognosis in the former as regards life is much more favourable than in the latter. In all cases the vision is lost. Although puerperal septic-



amia is almost invariably present, yet the ocular disease may follow an apparently normal labour.

The failure of vision may be the first symptom noted but this is rapidly followed by iridocyclitis and general panophthalmitis, which may run a severe, painful course, or occasionally an indolent painless one.

The septic emboli from the genitalia enter the blood and lodge in either the retinal or choroidal vessels. One eye is affected a few days after the other in binocular cases. If suppuration destroys the contents of the eyeball and they are evacuated, phthisis bulbi results, and the eye remains quiescent and harmless in the orbit. But if the intraocular membranes are not entirely destroyed and the sclera not extensively ruptured, atrophy of the eyeball results and, on account of the tension of the intraocular membranes by contraction of the exudate, recurrent attacks of inflammation occur and even sympathetic inflammation may be set up. Such a globe must be promptly removed.

The treatment of the eye in the acute stage is to apply heat to relieve pain, and later, open the eyeball, evacuate the contents, irrigate with antiseptics, and treat as an abscess cavity elsewhere.

#### **Exenteration in Panophthalmitis.**

LAPERSONNE (LILLE). *Archiv. de Ophthalmologia*, Vol. I, No. I, Jan., 1901.

Lapersonne incises the cornea with a Graefe knife, then enlarges the wound above and below, not however excising any of the cornea. After the pus and lens are evacuated, he inserts a large cautery at white heat into the ocular cavity, passing it all round the circumference. He repeats this thoroughly, then irrigates the globe cavity with sublimate solution, dusts iodoform over the opening, and applies a bandage. Healing soon follows, and in four weeks an artificial eye is inserted.

*J. W. Stirling.*

## Canadian Medical Literature.

UNDER THE CHARGE OF KENNETH CAMERON.

[The editors will be glad to receive any reprints, monographs, etc., by Canadian writers, on medical or allied subjects (including Canadian work published in other countries) for notice in the department of the JOURNAL. Such reprints should preferably be addressed to Dr. Kenneth Cameron, 903 Dorchester street, Montreal.]

### The Canadian Practitioner and Review.

January, 1901.

1. The Treatment of Tuberculosis in Sanatoria. P. H. BRYCE.
2. The Preventive and Curative Treatment of Pulmonary Tuberculosis. GEORGE H. HODGE.

February, 1901.

3. Some Points in the Surgery of the Kidney. JAMES F. W. ROSS.
4. Hydatid Cyst of the Tail of the Pancreas. GEORGE A. PETERS.
5. A Case of Dystocia from Uterus Bicornis with Contracted Pelvis. K. C. McILWRAITH.

March, 1901.

6. The Relation of Ovarian Disease to Insanity, and its Treatment. A. T. HOBBS.
7. Asheville, North Carolina, as a Health Resort for Pulmonary Tuberculosis. J. PRICE-BROWN.
8. Cancer of the Uterus. C. WAGNER.
9. Report of an Operation for Jacksonian Epilepsy. H. M. THOMAS.

April, 1901.

10. A Case of Tic. R. D. RUDOLF.
11. Tendon Transplanting in Paralytic Deformities. CLARENCE L. STARR.
12. A Comparison of Antiseptics. E. RALPH HOOPER.
13. Clinical Experience with Chlorotone and Mercuriol. C. E. DARCHE.

May, 1901.

14. A Case of Primary Abdominal Pregnancy. J. E. PICKARD.
15. History of a Case of Small-Pox. J. GODFREY.
16. Diphtheria vs. Acute Follicular Tonsillitis. JOHN GUNN.

June, 1901.

17. Notes on Eclampsia. K. C. McILWRAITH.
18. Medical Aspect of Cancer of the Breast. W. OSLER.

19. New Observations on the Treatment of Anæmia and Chlorosis.  
F. SONTAG.

1, 2, 7. BRYCE, after citing statistics of the prevalence of pulmonary tuberculosis and the stage of the disease at the time of diagnosis and treatment, goes into detail of the management of patients at sanatoria, especially the municipal sanatoria that are now being established in Ontario. HODGE deals with the etiology, diagnosis and treatment of the disease. PRICE-BROWN describes the work done and the results obtained at the well-known sanatoria at Asheville, N.C.

3. Ross, in this interesting paper, covers briefly the field of renal surgery.

4. PETERS relates the following case:—The patient, a man of 20, a native of Argentine Republic, had for two or three years suffered from attacks of pain, obscurely located in the stomach and bowels. A rounded tumor, which had been observed for several months, as large as a cocoanut, could be felt below the ribs on the left side, with its centre about midway between the nipple and sternal lines. The mass was tense and elastic, but no fluctuation could be felt. Having, by careful differentiation, decided that the cyst was connected with the tail of the pancreas, Peters determined to open it from behind, according to the advice and practice of Cathcart and Caird, of Edinburgh. An incision, about three inches long, was made from the margin of the erector spinæ forward, about parallel to the twelfth rib, and curving slightly upwards around its end in the direction of the margin of the costal cartilages. The lumbar fascia was divided, the colon displaced forwards with the peritoneum, and the kidney surrounded by its fat was found lying in its normal position and obviously quite healthy. On pressing the finger, upwards, forwards, and inwards, the cyst could be reached, and was tapped by a long hypodermic needle. With the needle as a guide, the cyst was incised, with some difficulty owing to its depth from the surface and the toughness and resistance of its walls. Three or four ounces of sero-purulent fluid escaped. A microscopic examination of the contents showed numerous brood-cysts, with their attached embryos in varying degrees of disintegration, as well as multitudes of the characteristic hooklets. The patient recovered, with, however, a sinus which discharged a small amount of fluid. Hydatids of the pancreas are extremely rare, though not unknown. In a series of 986 cases of hydatids in man collected by Neisser, none were found in the pancreas. Graham, of Sydney, Australia, says that the hydatid is sometimes found in the pancreas.

5. McILWRAITH describes a case of confinement which presented several unusual points of interest. The head was presenting but was

not fixed in the brim, back to the right, breech in the extreme left hypochondriac region. At the place where one should normally have felt only the arch of the back was a large mass extending up to the right hypochondriac region, where one would expect to find the fundus uteri. The mass was especially prominent during uterine contraction, of doughy consistency, not resonant on percussion, and over it the uterine souffle was heard with especial clearness. The patient after being in labour for thirty hours became exhausted and was delivered by version. On the introduction of the hand into the uterus a septum was found extending about one-third of the distance down the interior of the uterus. The placenta was adherent in the right cornu, which corresponded to the mass already mentioned, and the breech of the child had evidently been in the left cornu.

6. HOBBS writes upon the treatment of the pelvic lesions in the female insane.

8. WAGNER, in a short paper, speaks of some of the early and important changes in the mucous membrane in adeno-carcinoma of the uterus.

10. RUDOLF reports a typical case of tic, and from the fact that the movements were unaccompanied by any psychical phenomena, and, further, were not of a co-ordinate nature, it was evident that the case was one of simple tic. The case was unusual in the fact that it had commenced so late in life, at the age of fifty-six. Under the use of arsenic, taken in full medicinal doses, the patient had considerably improved.

11. STARR reports four cases in detail to illustrate the methods employed in the transplantation of tendons in paralytic deformities.

15. This case is interesting from an obstetrical standpoint. The patient had variola at the end of pregnancy. Labour took place eighteen days after she took to her bed, and sixteen days after the eruption had appeared. Under such circumstances small-pox is supposed to be very dangerous to both mother and foetus, but here the mother made a good recovery, and a healthy child was born without any symptoms of small-pox. The temperature was never more than 100, although the small-pox was to a certain extent confluent.

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### **The Maritime Medical News.**

January, 1901.

1. Treatment of Fractures. H. S. PEEKE.

2. Adenoid Vegetations of the Naso-Pharynx. W. G. PUTNAM.

February, 1901.

3. Review of One Hundred and Fifty Cases of Skin Disease. G. G. MELVIN.

4. Typhoid Fever. W. S. MUIR.



March, 1901.

5. Troubles of the Cornea. J. ROBERTSON MCINTOSH.
6. Abdominal Hysterectomy for Fibroid Uterus. A. LAPHORN SMITH.
7. Diphtheria. WILLIAM D. FINN.

April, 1901.

8. Gastrostomy. N. E. MACKAY.
9. A Visit to the Laurentian Sanatorium. GEO. L. SINCLAIR.

May, 1901.

10. Cellulitis of the Hand and Arm. W. HUNTLEY MACDONALD.
11. Abstract of a Paper on Tuberculosis. STEWART SKINNER.
12. Therapeutics in Small Doses—JAMES H. GRAY.

1. PEEKE discusses the modern treatment of fractures and more especially the mode of treatment by removable splints, assisted by massage, and active and passive movements. The advantages of this method are the ease with which the patient is made comfortable by arresting muscular spasm and so relieving pain, the effecting of rapid absorption of the effused blood, the prevention of stiffness by obviating the formation of adhesions, the prevention of muscle wasting and the preservation of the normal nutrition of the limb by aiding the circulation of the blood, and the shortening of the time under which the patient is prevented from resuming the ordinary use of the limb.

2. PUTNAM describes the adenoid growths of the naso-pharynx, and the usual operative procedure for their removal.

3. MELVIN reviews one hundred and fifty cases of skin diseases occurring in his practice, and draws from them some general conclusions as to percentages and methods of treatment.

4. MUIR contributes an interesting paper upon the present knowledge of typhoid fever and its management.

5. MCINTOSH considers the various diseases affecting the cornea, and the methods of their treatment.

8. MACKAY relates the history of a woman, aged 39, upon whom he had performed gastrostomy for malignant stricture of the cardiac end of the œsophagus. Treatment had been by the use of tubes and bougies, which had done far more harm than good by irritating the growth, and he performed the operation simply to take the patient out of her misery and make death easier. He is of the opinion that gastrostomy when performed sufficiently early, and in accordance with approved methods, will be found to be one of the most useful and beneficent operations the surgeon is called upon to perform.

10. MACDONALD gives some notes on the pathology and treatment of cellulitis involving the hand and arm.

12. GRAY enumerates a number of drugs that have very valuable effects in very small doses. This is true of the alkaloids which may be given in very small and frequently repeated doses.

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### **Canada Medical Record.**

February, 1901.

1. Progress of Gynæcology. A. LAPHORN SMITH.

March, 1901.

2. Note on a Hitherto Unnoticed Condition of the Omentum in Cancer of the Ovaries. A. LAPHORN SMITH.

April, 1901.

3. Insanity in Women by the Gynæcological and Obstetrical Point of View. A. LAPHORN SMITH.

May, 1901.

4. Odds and Ends in Ordinary Practice. A. D. STEVENS

5. Valedictory Address to the Graduating Class at the Annual Convocation of the Medical Faculty of the University of Bishop's College, April 16th, 1901. JAMES V. ANGLIN.

June, 1901.

6. Case of Uterine Polypus causing Severe Contractions Resembling Labour Pains Lasting Several Years. A. LAPHORN SMITH.

2. In cases of cancer of the ovary, SMITH has observed with greater frequency than is represented by authors, the presence of nodules springing up widely separated from each other and apparently independent of each other, which develop further sometimes in the mesentery and sometimes in a group of retro-peritoneal glands. In these cases he has observed with striking frequency affections of the omentum, sometimes in the form of a thick callous mass pushing itself like a board between intestines and the abdominal wall; sometimes rolled together to a single mass in such a manner that it resembled some peculiar atypical tumour.

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### **The Canada Lancet.**

January, 1901.

1. An Historical Sketch of Canadian Medical Education. W. B. GEIKIE.

2. A Case of Tuberculous Meningitis with Recovery. P. L. SCOTT.

3. A Case of Asthma Associated with Prolapse of the Liver. H. B. ANDERSON.

## February, 1901.

4. Aneurism of the Descending Portion of the Arch of the Aorta,—Rupture. HAROLD C. PARSONS.

## March, 1901.

5. Medical Ethics and what Pertains to a Physician's Reputation and Success. HERBERT A. BRUCE.
6. A Case of Puerperal Fever Treated with Anti-Streptococcus Serum, Recovery. A. H. GARRATT.
7. Remarks on Medical Aspects of the War in South Africa. J. T. FOTHERINGHAM.
8. Cerebral Palsies of Children. MESSRS. LUSK and PARSONS.
9. A Case of Laminectomy. G. A. BINGHAM.

## April, 1901.

10. Notes on Hydrochloric Superacidity, with reports of cases. GRAHAM CHAMBERS.
11. Latent Appendicitis. J. A. GRANT, JR.
12. Radical Cure of Large Umbilical Hernia. W. J. HUNTER EMORY.

## May, 1901.

13. Filariæ and Filariasis J. H. ELLIOTT.
14. Dysmenorrhœa. D. GILBERT GORDON.
15. A Case of Multiple Neuritis Succeeding Typhoid Fever with Permanent Paralysis. MESSRS PARSONS and LUSK.
16. The Prevention of Tuberculosis. J. E. ELLIOTT.
17. A Case of Ainhum. H. B. ANDERSON.

## June, 1901.

18. A Case of Deformed Legs. G. A. BINGHAM.

2. FOTHERINGHAM reports a case of meningitis of probably tuberculous origin which ended in recovery. The patient was 3 years and 3 months old, the mode of onset was very gradual, with headaches, stupor, etc., slight convergent squint and inequality of the pupils, spasms of the neck muscles and opisthotonos with pain on moving the head; Kernig's sign, the characteristic hydrocephalic night cry, vomiting during the onset but not very persistent, gradual and extreme emaciation, temperature very varying, and which was for some weeks so low that the child had to be kept warm by hot water bags, respirations slow and irregular, marked muscular insufficiency especially in the limbs, with inequality of distribution, very little, if any, twitching or continuous movements of the arm or leg, but on two occasions the facial muscles on one side were found contracted and twitching, as if general convulsions were impending. The treatment consisted in the ice bag to the head and worm at nape of neck for weeks, with the internal administra-

tion of iodide of potassium, gr. 5-8, bromide of ammonium, gr. 4, and tincture of gelsemium, m. 3, every four hours, with an occasional dose of morphia, hypodermically, and phenactin.

3. ANDERSON relates the history of a man who was subject to attacks of spasmodic asthma associated with prolapse of the liver. That the asthma was occasioned by the prolapse there was little doubt, the patient having himself noticed that so long as the liver remained in place he was comfortable. The asthmatic attacks were always preceded and accompanied by severe gastric disturbance. The occurrence of hepatic prolapse is not very frequent, Graham having collected only 70 cases, reported in the last 30 years. It occurs far more frequently in women who have borne several children and have loose abdominal walls, but is very rare in men.

4. PARSONS relates the history of a man who had died suddenly without apparent reason. He had enjoyed comparatively good health and no serious condition had been suspected during life. Examination revealed a thoracic aneurism which had ruptured into the posterior mediastinum.

9. BINGHAM relates the history of a case of laminectomy of the sixth and seventh cervical vertebræ. When the laminae had been removed it was seen that the fifth was dislocated forward and to the left and was exercising distinct pressure upon the cord. The lamina was therefore removed and the wound closed. The patient slowly but surely improved both as regards motor and sensory functions, until two months after operation, when he had fair control over the sphincters, the upper extremities were functionally about perfect, and he was beginning to use the legs to a limited extent.

10. CHAMBERS finds that excess of hydrochloric acid is a common result in analyses of gastric secretion. It may be present in hyperchlorhydria, hypersthenic gastritis, hypersecretion, ulcer, carcinoma, gastropnoia, atony, as well as some of the neuroses not mentioned in this list. It is evident that this sign alone is of little value in differentiating the above diseases. The causative agents may be local irritation from too rapid eating and the eating excessively of foods which are known to markedly stimulate the secretion of hydrochloric acid, or from excessive mental or moral disturbances. The principle symptom of hydrochloric hyperacidity is pain half an hour to three hours after eating, relieved by eating, or by an antacid. The treatment consists of suitable diet, a mixed diet being more rational than an exclusively meat diet. The medicinal treatment is by gastric sedatives and antacids. Strychnine and hydrastine are the drugs to be depended upon in cases of atony. Olive oil may be used in cases of spasm and obstruction of the pylorus. Bitters, acids, pepsine, and irritating cathartics are contra-indicated.



11. GRANT points out that in some cases of appendicitis there is a latency of the absolute conditions present: a grave condition, impossible of diagnosis, as well as an absolute latent appendicitis which may be diagnosed only after operation. He related the histories of six cases in which very extensive disease was discovered at operation, in which the clinical histories did not offer any indications of the very serious state of affairs that were found.

15. A case is reported by BAINES of typhoid followed by paralysis, with pain, etc., that suggested multiple neuritis. If this was so, the case is worthy of note, in that multiple neuritis complicating typhoid fever, according to Osler and other authors, is generally recovered from, but in this the paralysis and atrophy of the muscles have been permanent.

17. ANDERSON describes the specimen, the little toe of a negro, a case of ainhum, sent to him from Jamaica.

18. BINGHAM describes a case of extreme deformity of the legs. The patient was a lad of 14, being perfectly normal from his head to his knees; the right leg is rudimentary, but one bone being present and forming the prominence at the knee and external malleolus. There is a dislocation of the leg outwards at the knee, so that the whole surface of the inner condyle of the femur can be plainly felt beneath the skin. The leg cannot be extended beyond a right angle, but can be freely flexed. The foot is rolled inwards at the ankle so that it lies on the inner side of the lower extremity of the leg, with the sole looking upwards. There were only four metatarsal bones and four toes. Amputation was performed through the knee-joint and an excellent stump obtained. The bones of the left leg were twisted inwards, the internal malleolus was lower than the external. The metatarsal bones were turned inwards with a concavity on the inner side of the foot. The bones were chiselled and broken down and placed in a fairly good position. The result has been very satisfactory.

### **La Revue Medicale.**

2, 9, 23 janvier 1901.

Cogs-à-l'âne médicaux.

16 janvier 1901.

1. Notes Cliniques. C. A. WILSON-PRÉVOST.

30 janvier 1901.

Sur les Affections Syphilitiques de la Langue.

6 février 1901.

2. Constipation chez l'Enfant. W. J. DEROME.

13, 20 février 1901.

3. Du Diagnostic du Chancre Mou et du Chancre Syphilitique. Importance des Signes Optiques. HENRI LASNIER.

27 février 1901.

4. Quelques Cas de Rétroversion de la Matrice chez des Femmes Enceintes Guéris par la Ventrofixation. A. LAPHORN SMITH.

6 mars 1901.

5. Etude de la Torsion Pédiculaire des Kystes Ovariens. GEORGES AUBRY.

13, 27 mars 1901.

Glânes Canadiennes.

20 mars 1901.

6. Les Polypes de l'Utérus. Clinique de M. le prof. TILLAUX.

3 avril 1901.

7. L'Anesthésie par la Voie Lombaire. Certaines Particularités. M. T. BRENNAN.

10 avril 1901.

8. Traitement de l'Urétrite Aiguë par les Injections de Peroxyde d'Hydrogène. Z. RHEAUME.

24 avril 1901.

9. Du Peritonisme. Clinique de M. le prof. RENDU.

1 mai 1901.

10. Varicocèle. HENRI LASNIER.

8 mai 1901.

11. Epithélioma de l'Œsophagus. Clinique de M. le prof. RENDU.

15 mai 1901.

12. Ostéomyélite du Tibia. Clinique de M. le prof. TILLAUX.

22 mai 1901.

13. Tuberculose Péritonéale de l'Enfance. Clinique de M. le prof. MARFAN.

29 mai 1901.

14. Syphilis Spinale. Clinique de M. le prof. RENDU.

5 juin 1901.

15. Urétricèle Calculeuse. Clinique de M. le prof. TILLAUX.

12 juin 1901.

16. Prostatite Aiguë. EUGÈNE PAQUET.

19 juin 1901.

17. Cancer de l'Estomac. Clinique de M. le prof. RENDU.

26 juin 1901.

Tables des Matières.

## Reviews and Notices of Books.

INTRODUCTION TO THE STUDY OF MEDICINE. By G. H. ROGER, Professor Extraordinary in the Faculty of Medicine of Paris, Member of the Biological Society, etc. Authorized Translation by M. S. GABRIEL, M.D., with additions by the author. New York, D. Appleton & Company, 1901.

This book is a reproduction of a course of lectures delivered by Professor Roger in 1897-'98 at the request of the Faculty of Medicine of the University of Paris, and which were intended to give the student entering on the study of medicine a general idea of the subject, serving as an introduction and indicating his logical method of study. The author in the preface states that he has endeavoured to show what is the object of medicine and by what means it may be studied. After having explained how and why an individual becomes sick, he has considered the morbid causes which constantly tend to modify the unstable state of health. These causes give rise to manifestations through the lesions and reactions they determine, some of which can be detected only after death while others are appreciable during life. We are thus led to study the mode of reaction of the organism—namely, pathological physiology—to describe the pathological changes constituting pathological anatomy, and to look for functional changes, the description of which forms an important chapter, semeiology.

The first chapter discusses the objects of medical science and the divisions made for the systematic study of it. It gives a very clear view to the beginner of what his path must be to arrive at an intelligent understanding of the science. Then follow four chapters on the mechanical, chemical, physical and animate agents which disturb the condition of health equilibrium and constitute disease. The next two chapters treat of the etiology and pathogenesis of infectious diseases. Nervous reactions, disturbances of nutrition, heredity, inflammation, septicæmia and pyæmia, sclerosis, tumours, cellular degenerations, functional synergies and morbid sympathies, evolution of diseases: all form the subjects of chapters. The volume also contains chapters on examination of the sick, the clinical application of scientific principles, prognosis, diagnosis and therapeutics.

While the work is well written and contains much of interest to the graduate of medicine and advanced student, it is doubtful whether it would be of use as an introduction to a study of the subject. It might

be recommended to the student who has thoroughly mastered his primary subjects, and be helpful in enabling him to understand relations between the subjects of his final years, which he is too apt to miss. We cannot help thinking that to the majority of matriculants the subjects here presented would be entirely beyond their grasp. Thus the author illustrates, to select an example, the protective action of the liver against the introduction of *staphylococcus aureus*, by enumerating the duration of life following the injection of a virulent culture by four different channels, the carotid and femoral arteries, and the peripheral and portal veins. To understand the argument requires a knowledge of anatomy, and this is not a single instance, but one of many. We do not wish to condemn the work, however, for to the final student and graduate it gives a comprehensive view of the whole science and art of medicine with a proper estimation of the correlations of their various parts. We can recommend it to all such, as most pleasurable and profitable reading.

**STUDIES IN THE PSYCHOLOGY OF SEX.** *The Evolution of Modesty: The Phenomena of Sexual Periodicity: Auto-Erotism.*—By HAVELOCK ELLIS. Philadelphia, New York, Chicago, F. A. Davis Company, 1901.

This work, as its title indicates, is written entirely from the psychological point of view, and has therefore only a limited interest to those whose tastes lie in such problems. The author brings together a mass of what one cannot call facts, but opinions of various writers from Hippocrates down to the present time, and draws his conclusions therefrom. Were one to adopt the same method with regard to the study of the physiology of any organ, for instance, what a remarkable result would be obtained, especially if the theories of the earlier writers were given equal weight with those of the present day. To the busy practitioner there is little of interest in the work, for even were he to occasionally meet with individuals whose actions he could perhaps the better understand from the perusal of the book, there is nothing to help him in his treatment of them, this latter consideration being entirely ignored.

**MASTERS OF MEDICINE.** Hermann Ludwig von Helmholtz.—By JOHN GRAY MCKENDRICK, M.D., F.R.S.S.L. and E., Professor of Physiology in the University of Glasgow, etc. London, T. Fisher Unwin.

Of the great minds which have illumined the scientific world in the past century, perhaps none has shown a brighter lustre than the subject of this biography, who, although educated as a physician and for a time in actual service as an army surgeon, could not do otherwise than obey the behests of his giant intellect and devote his life to purely scientific



pursuits, which culminated in the invention of the ophthalmoscope, the ophthalmometer and the extraordinary advance in the physics and physiology of the organs of vision, as revealed in his magnificent work on "Physiological Optics." But these represent but a small amount of his life work, embracing as it did the whole field of physiology and histology, the electricity of animal life and physics generally from a medical standpoint and many other collateral studies. There are few of the present day who know how much Von Helmholtz has really done for medical science, but no real lover of his profession could spend more profitably or enjoyably a few hours than in tracing the life of this remarkable man from the early dawn of a master mind to the ripe maturity of vigorous old age, unclouded to the last through a record of work which would make the greatest efforts of ordinary mortals look tame and insignificant. It would indeed be difficult to find a more interesting and instructive biography than that of Hermann von Helmholtz.

**OPERATIVE SURGERY.**—By JOSEPH D. BRYANT, M.D., Professor of the principles and Practice of Surgery, Operative and Clinical Surgery, In University and Bellevue Hospital Medical College, etc., etc. Vol. II. New York, D. Appleton & Company. 1901.

The first volume appeared some months ago, and was favourably reviewed. The present volume maintains about the same standard of excellence. It contains a great deal, some of which might possibly be omitted in this new century. Are we to continue to insist in the 20th on all the old discarded methods of past centuries?

This second volume is very full of matter tersely put without padding, and sometimes of matter that appears to the reviewer to be imperfectly digested. It is a valuable book of reference; it contains all that such a book should contain, and more. It does not seem to contain to a sufficient degree the results of the very large surgical experience of the author. On the other hand, in its pages may be found almost all that has been thought and done by everybody. It is therefore unusually valuable as a reference book. The illustrations are very numerous. The print and paper are good.

G. E. A.

**ANNUAL AND ANALYTICAL CYCLOPÆDIA OF PRACTICAL MEDICINE.**—By CHARLES E. DE M. SAJOUS, and one hundred associate editors. Vol. VI. Philadelphia, New York and Chicago, F. A. Davis Company. 1901.

This volume is the last of the first series of the present work. The editor claims and with justice that the promise made at the beginning has been fulfilled. These six volumes contains a wonderful amount of matter, for the most part of a high order. The articles are well writ-

ten, the literature of each subject widely reviewed and placed before the reader in a concise abbreviated form, and yet in language quickly and easily understood. The editors and publishers may be congratulated on the successful accomplishment of their undertaking.

The most notable articles in the sixth volume are those on rheumatism, by Dr. Levison, of Copenhagen; "Diseases of the Stomach," by Professor D. D. Stewart, of Philadelphia; "Surgery of the Stomach and Intestines," by Prof. W. W. Keen and Dr. M. B. Tinker, of Philadelphia; "Surgery of the Spine," by Prof. R. H. Sayre, of New York; "Syphilis," by Prof. G. F. Lydston, of Chicago; "Surgery of the Urinary System," by Prof. J. W. White and Dr. A. C. Wood, of Philadelphia; "Wounds and Injuries of the Chest," by Prof. L. A. Stimson and Dr. E. L. Keyes, Jr., of New York; and "Yellow Fever," by Surgeon-General Wyman, of Washington. At the end of the volume is a full index which will be found to facilitate reference.

MODERN SURGERY, GENERAL AND OPERATIVE.—By JOHN CHALMERS DACOSTA, M.D., Professor of Clinical Surgery, Jefferson Medical College, Philadelphia, Surgeon to the Philadelphia Hospital and the St. Joseph's Hospital, Philadelphia. Third Edition, Revised and Enlarged. Philadelphia and London, W. B. Saunders Company. 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$5.00.

The appearance of this third edition two years after the second is proof of the demand for the book and the determination of the author to keep it abreast of the times. Previous volumes have received favourable notice, and the present is worthy of the same favourable comment. It is one of the best one-volume surgeries of the day. It is well illustrated and eminently adapted to needs of students and practitioners.

DISEASES OF THE STOMACH AND THEIR SURGICAL TREATMENT.—By A. W. MAYO ROBSON, F.R.C.S. and Member of Council and Hunterian Professor, Royal College of Surgeons of England, etc., and M. G. A. MOYNIHAN, M.S., Lond., F.R.S.C., Assistant Surgeon, Leeds General Infirmary. London, Baillière, Tindall and Cox. Price, 15s.

In this book the modern surgery of the stomach is very closely and attractively described. The name of one of the authors is in itself a guarantee of high excellence in the character of the work. After a short description of the anatomy of the stomach as a refresher, and the announcement of a few new facts relating to the position of the stomach and its relations to neighbouring parts, congenital stenosis of the pylorus is described. In the succeeding chapters the authors take up injuries to the stomach, simple tumours and malignant disease, including cancer and sarcoma.

The chapters on malignant disease and on ulcer of the stomach possess great merit. The former deals with the most important question of early diagnosis. They divide ulcers into two classes, the acute occurring more frequently in women and the chronic found oftener in men. The complications and sequelæ of gastric ulcer are brought out prominently, their very considerable mortality emphasized and the indications for and results of surgical treatment in suitable cases compared with medical, and not altogether in favour of the latter.

The surgery of the stomach has made great strides lately, and it would seem that surgery may very materially aid in the treatment of those ulcers that resist dieting and rest. The authors recommend strongly the surgical treatment of gastrorrhagia when severe and persistent, and prove the correctness of their views by statistics. The book altogether is admirable and to be highly commended.

*G. E. A.*

PRACTICAL SURGERY FOR THE GENERAL PRACTITIONER.—By NICHOLAS SENN, M.D., Ph.D., LL.D., Professor of Surgery, Rush Medical College in affiliation with the University of Chicago, etc., etc. With 650 illustrations, many of them in colours. Philadelphia and London, W. B. Saunders and Company. 1901. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$6.00.

This is certainly one of the most remarkable publications which has appeared under the above title for some time. A large book of 1133 pages, and yet as notable for its omissions as for its contents. Nothing can be more true than the author's statement in the preface that "this book is not intended to cover the whole field of surgery." A fairly careful search has failed to discover any chapter on gall-stone surgery, on the surgery of the kidney or ureters other than that necessitated by traumatism, on stone in the urinary bladder or on the surgical diseases of the female breast. And yet the book is professedly written for and in part dedicated to the general practitioner. Surely the general practitioner is as much interested in hepatic colic and in mammary abscess as in enterorrhaphy.

The contents of the book are nevertheless of a high order written by a surgeon of great experience, a successful teacher and one entitled to speak with authority. A most admirable chapter is that on anæsthetics. The author's statement that ether is safer than chloroform, and that ether should not be administered in a non-porous cone, probably no hospital surgeon will be found to dispute. Dr. Senn brings military surgery up to date, and gives the reader the benefit of his large experience in military surgery.

The chapter on the control of hæmorrhage is very full and complete and well illustrated. Great praise is also due to the chapters on the

various forms of peritonitis and appendicitis. The chapters on fractures and dislocations are well written, well illustrated and well founded. As remarked before, the contents are of a high order. *G. E. A.*

THE TREATMENT OF FRACTURES.—By CHARLES LOCKE SCUDDER, M.D., Physician to the Massachusetts General Hospital, Out-Patient Department, Assistant in Clinical and Operative Surgery in Harvard Medical School; and FREDERICK J. COTTON, M.D. With 585 illustrations. Philadelphia, W. B. Saunders. 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$4.50.

Although professedly devoted to the treatment of fractures, space is frequently, when thought advisable, given to the discussion of questions of pathology. Two features quite noticeable are the strong recommendation of the employment of general anæsthesia in the examination and initial treatment of fractures, especially of those near or involving joints, and the numerous tracings of the Röntgen rays, which have been very generally used to illustrate the sites and the displacements of fractures.

The advisability of following the author in the use of the terms "closed" and "open" instead of the old and familiar terms "simple" and "compound" may perhaps be questioned.

The book may be considered naturally as an expression of the author's views, but also of those of the Boston school. It is altogether an admirable book and one worthy of the highest commendation. *G. E. A.*

CLINICAL PATHOLOGY OF THE BLOOD. A Treatise on the General Principles and Special Applications of Hæmatology.—By JAMES EWING, A.M., M.D., Professor of Pathology in Cornell University Medical College, New York City. Illustrated with thirty engravings and fourteen coloured plates drawn by the author. Lea Brothers and Co., Philadelphia and New York. 1901.

This is the second book specially devoted to a discussion of the blood changes occurring both in diseases of the blood and in other diseases which has appeared in America, and it forms a valuable addition to the physician's library, both as a text-book for laboratory methods and a reliable authority on the most recent views on a subject which is daily receiving more attention. As such it is especially welcome at the present time, and a careful perusal of it has convinced us that the author has made a thorough study of all the work hitherto accomplished, and, in the light of his own experience, is well qualified to express an authoritative opinion regarding the numerous debatable points which are always arising in connection with the earlier study of any department of medical science. While, however, the author quotes freely and fully from the work of others, he states his own views in a decisive manner



which will render the book especially valuable to students, who bear no good will to the writer who sets forth various views and then leaves his reader to make a choice between them.

The first two chapters are devoted to technics and the chemistry of the blood. The author considers that Oliver's hæmocyto-meter does not compare favourably with the Thoma-Zeiss, but of the Oliver hæmoglobinometer he speaks highly, regretting that its high price prevents its more general use. The Fleischl instrument, however, he regards as sufficiently accurate for clinical purposes. The hæmatocrit has not yet reached the state of perfection warranting its adoption as a means of determining the number of red cells. The directions for preparing blood slides are not those usually advised in text-books. The author prefers to spread the blood by drawing the polished edge of one slide over a second one resting on a firm surface and to fix the blood by passing it through the flame of a Bunsen burner. The commonly used alcohol and ether mixture is not mentioned. The chapter on the chemistry of the blood is not of much practical value to the clinician, owing to the elaborateness of the chemical tests.

In his classification of leucocytes, the author has adopted the one now most commonly seen in text-books of medicine, and much the most satisfactory from the clinical point of view, namely, lymphocytes, large mononuclears, polynuclear neutrophiles, and eosinophiles, and to these he adds myelocytes and mast cells as pathological forms. The chapters on pernicious anæmia and leukæmia are most instructive, and form a complete summary of our present knowledge of the blood conditions in these diseases. The author is very positive in the limitations which he sets for the blood condition in pernicious anæmia, holding that the diagnosis cannot rest on extreme reduction of red cells, but may rest upon the presence of: "numerous megaloblasts and megalocytes with increased hæmoglobin: 33 per cent. of megalocytes with increased hæmoglobin: an excess of megaloblasts over normoblasts; or a single giantoblast or megaloblast in pathological mitosis; and that it may require the complete summation of clinical and morphological data, as well as observation on the course of the disease, or even the microscopical examination of the marrow." With regard to the anæmia infantum of von Jaksch, Ewing thinks that, while many of the cases so reported are improperly classified under this heading, there is sufficient ground on which to separate, at least for the present, certain peculiar forms of chronic anæmia in children from the other blood diseases. The various forms of Hodgkin's disease, including the splenic form (splenic anæmia) are described together under the heading of "pseudo-leukæmia."

The work also contains a very complete description of the condition of the blood in the infectious, constitutional and parasitic diseases, and

chapters on malaria and relapsing fever. The book is well illustrated with numerous engravings and fourteen coloured plates, the latter of which, although fairly well representing the colouring of the stains, would have been better if they had not been so highly amplified. We can recommend the work as a reliable presentation of the present knowledge of hæmatology and a valuable addition to our literature on the subject.

G. G. C.

NURSING ETHICS. FOR HOSPITAL AND PRIVATE USE.—By ISABEL HAMPTON ROBB. J. B. Savage, Cleveland. 1901.

The well-merited success which the author's previous works on nursing have met with ensures for the present volume a good reception from the training schools for nursing on this continent. Added to this is the need for just such a work, showing as it does the obligations her chosen profession imposes upon the professional nurse, such as that of secrecy regarding both the actual bodily ailments and domestic affairs of her patient, and giving her many useful hints with regard to her conduct towards those immediately placed under her charge, and those with whom she comes in contact in the daily exercise of her profession.

In the introductory chapter the author draws attention to the lack of any accepted code of ethics for nurses, a want which a few have supplied by evolving one for themselves from personal experience and observation. The book, however, is not intended to constitute a formal code but rather "to consider briefly the nature of ethical laws and try to determine in what ways they may be made to have a practical bearing upon a nurse's duties and actions." Apart from this main purpose the book contains excellent directions regarding the care of the nurse's body and clothes, the duties devolving on her in her several positions as probationer, junior and senior while in hospital, and the many matters, small in themselves, on which a word of advice or caution may perhaps save from awkward and annoying mistakes.

In the chapter discussing the graduate nurse, Mrs. Robb, in speaking of contagious diseases, is only right when she says, "If a nurse undertakes to do general nursing it is her bounden duty, no less than that of the physician, to take whatever case may come to her." There is an exception to this, of course, when she has selected a certain branch of nursing as her specialty.

We are delighted to recommend the book, not only to nurses themselves, but to the physicians who employ them, as an appreciation by the latter of the nurse's proper position would lead in many instances to a better understanding between those who are in reality fellow-workers.

SAUNDERS' QUESTION-COMPENDS. *Essentials of Surgery.*—By EDWARD MARTIN, A.M., M.D., Clinical Professor of Genito-Urinary Diseases in the University of Pennsylvania. Seventh Edition, Revised and Enlarged. Philadelphia, W. B. Saunders. 1900. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$1.00.

This number of Saunders' Compends has been thoroughly revised. The principal new feature about this edition is a chapter dealing with the surgical treatment of appendicitis.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY. For Practitioners and Students. A Complete Dictionary of the Terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry and the kindred branches.—By W. A. NEWMAN DORLAND, A.M., M.D. Second Edition, Revised. Philadelphia and London, W. B. Saunders and Company. 1901. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$4.50.

It is just a year since the first edition of this dictionary was issued, and although it was a large one, it was soon exhausted. We commented favourably on it at the time. The second edition, in spite of the short time which has elapsed, contains nearly one hundred new terms that have appeared in medical literature during the year. From the rapid advance in almost all departments of medical science, necessitating the employment of new terms, the plan of frequently revising a work of this sort, although it must entail an enormous amount of labour, offers decided advantages to the student especially, and this dictionary should become a favourite in all medical schools. The flexible leather binding, clear type and thin paper make an ornamental book.

INTERNATIONAL CLINICS. A Quarterly of Clinical Lectures and Especially Prepared Articles on Medicine, Neurology, etc.—By Leading Members of the Medical Profession throughout the World. Edited by HENRY W. CATTELL, A.M., M.D., Philadelphia, with the assistance of ten Collaborators. Vol. IV. Tenth Series, 1901. Philadelphia, J. P. Lippincott Company. 1901.

The "International Clinics" still continues to possess the popularity it has had for the profession by never failing to present in each of its volumes something of interest to every practitioner, no matter what his individual tastes may be. The present number is much like its predecessors in having papers from many of the leading clinicians of Europe, among which we may mention Potain, of Paris, on the use of digitalis in heart disease, Renault and Guyon, of the same University, on genito-urinary diseases, and Roncali, of Rome, on the connection of blastomyces with malignant disease. Besides these, there are clinics by many of the

leading teachers of the United States on subjects of special interest at the present day.

Nearly one-third of the volume is taken up by a monograph on the etiology and morbid anatomy of various diseases by the editor, Henry W. Cattell. Here the author gives a list of diseases in alphabetical order, with the etiology and pathology condensed into a few lines. This is too much condensed to serve any purpose but that of a dictionary, and it seems altogether out of place here. As a sample of the incorrect information it would give to the student to whom it is more especially addressed, we clip the following under the heading of "Smallpox," Etiology—(a) Overcrowding. (b) Improper food. (c) Season, fall or winter." There is not a word to indicate that smallpox is an infectious disease, and one looks in vain for any disease under the heading of Variola. It is to be regretted that the editor had not seen fit, even at the expense of having issued a somewhat smaller volume than usual, to be satisfied with publishing the above mentioned clinical lectures, many of which are of a high order.

**MANUAL OF THE DISEASES OF THE EYE FOR STUDENTS AND PRACTITIONERS.** With 243 Original Illustrations including 12 coloured figures. By Charles H. May, M.D., New York, William Wood & Co., 1900.

This small work might be termed a "compend;" and the author in his preface states that he desires "not to say too much" in the book, and he certainly has succeeded. The material is wonderfully condensed, and in many cases much previous knowledge of the subject on the part of the reader would have to be taken for granted if he were to understand the text thoroughly.

A very free use of italics has been made to emphasize the salient facts, and this occurring in a book already greatly abbreviated gives rise to pages of little else than italics. Among the original illustrations may be mentioned one of a test lens case!

**THE AMERICAN YEAR BOOK OF MEDICINE AND SURGERY FOR 1901.** Arranged with critical editorial comments by eminent American Specialists.—Edited by GEORGE M. GOULD, A.M., M.D., Philadelphia. In two volumes. Vol. I., General Medicine. Vol. II., General Surgery. Philadelphia and London, W. B. Saunders & Co. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$3.00 per volume.

The issue of the year book for 1900 met with such general approval that the publishers decided to follow the same plan in the present number. Either volume can be had separately, the one on medicine



contains about 70 pages more than that on surgery. The collaborators have shown much good judgment in their selection of abstracts, and the editorial comments thereon are timely and helpful to the reader. The book maintains its high standard of previous years. Where there is such an immense amount of material from which it is sought to cull the best and most useful, and such comparatively small space in which to condense it, it is a most difficult matter to do even justice to all, but it seems that the difficulties have been here successfully overcome. It is not beyond the mark to say that of all the vast amount of work accomplished in medicine and surgery during the past year, the most important has here been collected.

SAUNDERS' MEDICAL HAND-ATLASES. Atlas and Epitome of Ophthalmoscopy and Ophthalmoscopic Diagnosis. By Prof. Dr. O. Haab, of Zurich. Authorized Translation from the Third Revised and Enlarged Edition. Edited by G. E. deSchweinitz, A.M., M.D. With 152 Coloured Lithographic Illustrations. Philadelphia and London, W. B. Saunders & Co., 1901. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$3.00.

The publication of this valuable atlas at a very reasonable price is a great boon, not only to the ophthalmologists but also to the general medical profession of America. The review of a work like this can only be laudatory. Since the days of Jaeger's Atlas, nothing has been published to compare with it.

The book opens with a short dissertation on the ophthalmoscope and the method of conducting an ophthalmoscopic examination. The coloured plates, of which there are one hundred and fifty-two, include not only pictures of the fundus oculi in various diseases but also illustrations of microscopical sections of normal and pathological conditions. The plates throughout are beautifully done and are accompanied by explanatory letter-press. J. W. S.

THE JOHNS HOPKINS' HOSPITAL REPORTS, Vol. X, Nos. 1 and 2.

This fasciculus contains three papers, each of very considerable interest. The first is a contribution on the structure of the malarial parasites from the pen of the late J. W. Lazear who fell a victim to his devotion to science, having contracted yellow fever by submitting to the bite of an infected mosquito. The article relates the author's experience with various stains in demonstrating the minute structure of the organisms. It is illustrated by a beautifully executed plate.

The second article by Dr. Thomas R. Brown is on the bacteriology of cystitis, pyelitis, and pyelonephritis in women, and is based on careful study of 100 cases from Professor Howard Kelly's wards. In

every one of the hundred cases some bacterial agent was found in the urine; nevertheless, the author, though having no cases to report, admits that in rare instances we may have a true cystitis without any infection, as where the cause is some chemical irritant such as cantharides, or aniline.

In considerably more than half of the cases, acute and chronic, the bacillus coli communis was found in pure culture. In the remaining cases, with a few exceptions, the staphylococcus albus and aureus were found. Six cases of tuberculous cystitis were met with in the series. In four of these the cystitis was associated with pyelitis and pyelonephritis. The great frequency of colon bacillus infection is easily explained by the almost universal presence of the colon bacillus in the neighbourhood of the urethra, from which the catheter carries it to the bladder.

While thus supporting by his researches the almost universal belief in the bacterial origin of cystitis, the author contends for the importance of predisposing causes, such as trauma from the catheter, etc., congestion from pregnancy, parturition, relaxation of the vaginal outlet, pressure of tumours, retention of urine, besides all influences which lower the general condition of the patient.

Twenty cases of pyelitis and pyelonephritis were studied. Of these, six were tuberculous. When one bears in mind the great care and labour involved in collecting specimens of urine from each kidney, apart from the bacteriological examinations, some idea is had of the arduous nature of this most admirable piece of work.

A digested report of each of the hundred cases is appended. The bearing of these researches on questions of cause and treatment is obvious.

The third and last paper is on cases of infection with strongyloides intestinalis by Dr. Richard P. Strong, Asst. Surgeon, U.S. Army.

W. G.

A TEXT-BOOK OF GYNÆCOLOGY. Edited by Charles A. M. Reed, A.M., M.D. Gynæcologist and Clinical Lecturer on Surgical Diseases of Women at the Cincinnati Hospital. New York, D. Appleton & Co., 1901.

This admirable book is by various authors, selected by the editor for reputation acquired by them in connection with the subjects upon which they were asked to write. They are not all gynæcologists. We see the names of professors of pathology, therapeutics, diseases of the nervous system, dermatology, rectal surgery and general surgery. Nor are the authors all of the United States. Dr. Ballantyne of Edin-

laugh and Professor Murdock Cameron of Glasgow and W. Sapp Sinclair of Manchester, as well as our own respected colleague, Professor Wyatt Johnston of Montreal, are contributors.

We have examined the book with considerable care, and find that all the subjects ordinarily included within the scope of gynecology have been ably dealt with, while diseases of the urinary tract and rectum have received their due meed of attention. It is probably invidious to single out one chapter for special mention but we cannot help thinking that the subject of menstruation and its disorders has been treated with admirable knowledge and judgment.

The work is copiously illustrated and for the most part admirably by R. J. Hopkins and this notwithstanding the fact that many of the figures are diagrammatic.

W. G.

#### A TEXT-BOOK OF HISTOLOGY INCLUDING MICROSCOPIC TECHNIQUE.

By A. A. Böhm, M.D. and M. von Davidoff, M.D., edited with extensive additions to both text and illustrations, by G. Carl Huber, M.D., Junior Professor of Anatomy and Director of the Histological Laboratory, University of Michigan. Authorized translation from the 2nd revised German edition, by Herbert H. Cushing, M.D., pages 501 with 351 illustrations. Philadelphia, W. B. Saunders & Co., 1900. Canadian Agents, J. A. Carveth & Co., Toronto.

Böhm and von Davidoff's Text-book of Histology rapidly became popular as the first German work upon this subject, and well deserves to be translated into English. It is a matter of great good fortune that the translation has been edited by Professor Huber. The result is we have now presented to us what upon study shows itself to be quite the fullest and most satisfactory text-book upon histology in our language, a work which is a distinct improvement upon its German prototype, for professor Huber's own histological researches are of the first order and the added illustrations could not be improved upon. We heartily congratulate all concerned in the production of this admirable work and feel sure that it will take rank as an authoritative text-book upon the subject.

J.G.A.

PHYSICAL DIAGNOSIS IN OBSTETRICS. By EDWARD A. AYERS, M.D., Professor of Obstetrics in the New York Polyclinic, Attending Physician to the Mothers' and Babies' Hospital, New York. Illustrated. E. B. Treat & Co., New York. Price, \$5.00.

The author in his preface states that the aim of this book is to represent on paper the clinical study of obstetrics as he is in the habit of pursuing it in hospital and dispensary work. A very elaborate ob-

sterical history chart is given in the opening chapter and it forms the general text for the whole book.

The work is exceedingly practical throughout, the style being clear and concise. The teaching is sound and free from bias or fads of any kind. The chapter on pelvimetry is specially good, while that on abdominal palpation leaves little to be desired. One notes that delivery of the parturient in the dorsal position is recommended, and that the use of the lateral position for this purpose is not even mentioned.

The illustrations are clear and the publisher's work eminently satisfactory. The book can be confidently recommended to all interested in the study and practice of obstetrics.

*D. J. E.*

**OBSTETRIC AND GYNÆCOLOGIC NURSING.** By E. P. DAVIS, A.M., M.D., Professor of Obstetrics in Jefferson Medical College and Philadelphia Polyclinic. Philadelphia and London, W. B. Saunders & Co. 1901. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$1.75.

This book has been prepared, as the author states in his preface, for the training schools of the Jefferson and Philadelphia hospitals. It is arranged in two sections, as the title indicates, the section on maternity nursing being the more lengthy. The style is clear, though the instruction in technical detail is somewhat elementary even for a book of its class. The author has enlarged to some extent upon the care of the infant in health and disease and this section of the book is particularly acceptable and full of valuable instruction.

The general arrangement of the contents and the publishers' work leave nothing to be desired. Not the least valuable part is the appendix, which contains a dietary and very full directions for the preparation of surgical supplies.



## Society Proceedings.

### MONTREAL MEDICO-CHIRURGICAL SOCIETY.

*Stated Meeting, May 10, 1901.*

DR. PERRIGO, PRESIDENT IN THE CHAIR.

DR. A. LAPHORN SMITH read the report of a case of *Pseudo-Myxomatous Peritonitis* which had come under his notice.

DR. E. W. ARCHIBALD exhibited a *Carcinoma of the Stomach* which had been removed by Dr. Garrow a few days previously. The tumour had evidently originated in an old ulcer and involved the whole thickness of the stomach. The main point of interest was its having developed from a very large old ulcer. Microscopically it was seen to be a scirrhus of very pronounced type, with enormous development of fibrous tissue and very few alveoli and neoplastic cells. The more common site of cancer of the stomach is generally stated by authors to be at the pylorus in from 60 to 70 per cent. of the cases; Dr. Archibald said there was evidence accumulating to show that by far the greater number develop in the smaller curvature not far from the pylorus. From the fact that the growth later involves the pyloric ring and that the statistics have been obtained from post-mortem examinations of the organ, the opinion had been formed that the pylorus was the more common site.

Dr. Archibald also showed an *Adeno-carcinoma of the Rectum* removed by Dr. Garrow. It was interesting from the outspoken papillomatous nature of the growth, especially towards the rectum, in which numerous papilliform projections were seen. Nearly all carcinomata of the intestinal tract tended to take on this papillomatous nature. Microscopically the adenomatous growth was seen to involve the mucosa nearly altogether, the submucosa very little, and the muscular layers hardly at all.

Dr. Archibald also referred to the microscopical appearances of an enlarged gland removed from the omentum in the case first shown. It did not show any invasion of the carcinoma. He referred to the difficulty of distinguishing between true neoplastic cells in such glands and the large pale cells of proliferating endothelium which are present in glands removed from the neighbourhood of carcinomatous growths and in typhoid fever. The occurrence of these glands in car-

cinoma had been explained by the supposition of a toxic action produced by the disturbance set up by the neoplasm.

DR. GARROW referred to the method of treatment employed in the case of carcinoma of the rectum. He had formed a colotomy wound some three weeks before the removal of the rectum and failed to detect any enlarged glands, while the growth itself was freely movable. On performing the operation, however, it was found that the growth had burst through on one side and invaded the true rectal tissue and the mesorectum. A few days later he had opened up the abdomen and dissected up the rectum and sigmoid flexure so as to get well above the growth. It was the first time he had had to do a combined abdominal and trans-sacral operation, and he felt that by this method he had made a thorough removal of all the diseased tissue.

The carcinoma of the stomach had occasioned no trouble in its removal owing to the non-involvement of other parts.

DR. ELDER asked Dr. Archibald whether he had stated in regard to the glands in the neighbourhood of cancer that it was difficult to tell whether they were infected with the disease or not. Some pathologists taught that all glands in the neighbourhood of a malignant growth should be removed, and others that only in certain cases was this necessary. If he understood Dr. Archibald aright a swollen gland in the neighbourhood of cancer might be cancerous.

DR. GARROW thought it made a difference as to the situation of the cancer. In cancer of the breast, experience had taught that it was the proper thing to clean out all the glands, and the same was true in regard to cancer of the tongue, but this did not hold true of every part of the body.

DR. ARCHIBALD, in reply, did not feel in a position to state anything very positively in regard to the morphology of these cells to which he had alluded, and explained the difficulty in determining whether or not they were cancerous. With regard to the advisability of removing glands in the neighbourhood of cancers, he was of the opinion that it was absolutely necessary to do so. He had at times been unable to find evidences of neoplastic invasion in cutting one half of a gland and obtained undoubted evidence of it on cutting the other half, and for that reason he advocated always removing them. On the other hand all swollen glands in the neighbourhood of malignant disease were not necessarily cancerous, as many showed, as before stated, only hypoplasia and proliferated endothelial cells, which he believed was brought about by a toxic effect from the cancer or by direct microbic invasion.

DR. JAMES STEWART presented a patient with a very marked degree

of *Tubex*. The most striking feature of the case was the condition of the right knee. Two years previously it had suddenly become swollen and at the present time, although the man could move the joint fairly well and there was absence of pain, it felt like a bag of bones. Pathologically the condition resembled very closely rheumatoid arthritis, but clinically there was a wide difference between the two. It is characterised principally by the suddenness of onset and the painlessness. Though this patient was unable to walk, it was often surprising how well such cases could get about even when the joints were greatly disorganised. In addition to the knee condition there was marked loss of sensation in the lower limbs, delayed sensation and almost complete absence of pain sensation in the soles of the feet.

DR. TELFER reported *Two Cases of Erysipelas Treated with Anti-streptococcus Serum*.

DR. BIRKETT related the history of a case of *Foreign Body in the Bronchus* which will be published later.

DR. ELDER reported a case of *Cholecystitis resembling Appendicitis*.

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*Stated Meeting, May 24, 1901.*

DR. PERRIGO, PRESIDENT IN THE CHAIR.

DR. T. P. SHAW read the report of cases of *Miliary Tuberculosis complicating Pregnancy*.

DR. B. D. GILLIES read a paper entitled *Notes on the Action of Herion*. See page 450 of the June number.

DR. A. D. BLACKADER read a paper on *Acute Dilatation of the Heart*. Published in the July number, page 533.

DR. G. P. GIRDWOOD showed an instrument which he had designed in order to enable one to study stereoscopic microphotographs.

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*Stated Meeting, June 7, 1901.*

DR. PERRIGO, PRESIDENT IN THE CHAIR.

DR. GARROW showed a man on whom he had performed the operation of pylorectomy. The patient, aged 48 years had been under Dr. Martin's care in the Royal Victoria Hospital and had complained of indigestion and soreness of the stomach with loss of weight and strength. There had been evidence of a tumour and pyloric obstruction had been diagnosed. The specimens from the case had been exhibited at a previous meeting and the nature of the operation described. The man had made an uneventful recovery, having been fed by nutrient enemata for five days and after that gradually accustomed to taking all kinds of

food, and only once experienced any distress, when, after a meal of potatoes, he had an attack of diarrhoea.

Dr. Garrow also showed a case of *Tendon Transplantation* in a boy eight years of age, showing a very good result.

Dr. MARTIN, referring to the first case, said that an examination of the patient had shown a tumour in the stomach with marked dilatation of that organ as shown by the large quantity of fluid present in the morning. The stomach contents examined after a test meal showed the present of hydrochloric acid, absence of lactic acid and a total acidity within normal limits. The reason for this finding was probably that the malignant growth was more of the nature of a cirrhosis of the stomach wall than of carcinoma. Dr. Martin also referred to another case in which similar results had been obtained on making a test, but at operation an inoperable carcinoma had been revealed.

Dr. HILL showed a case for Dr. SHEPHERD. The patient had come to the Montreal General Hospital at the end of April complaining of pain and soreness with limitation of movement in his left shoulder. On examination it was found that the head of the humerus was beneath the coracoid process. The accident had occurred five weeks previous to entrance and the only treatment used had been the application of liniments. Dr. Shepherd attempted to reduce the dislocation under ether anæsthesia, and while manipulating the parts a large swelling occurred in front of the shoulder. On cutting down on this it was found that the vein had been ruptured and that the tuberosities had been separated from the head of the shaft. Whether the rupture had been caused by a spicule of bone penetrating the vein, or by adhesions of the vein to the capsule and consequent tearing, could not be determined. The bleeding points were tied and the wound healed after a good deal of oozing of serum.

Dr. ELDER had seen the accident at the time and thought that one of the lessons to be learned from it was the danger of attempting to reduce an old dislocation except in a proper place, such as a hospital, where an extensive operation could be performed with safety.

Dr. BAZIN showed for Dr. MACTAGGART a specimen of *Ruptured Heart*. It was taken from an old lady 70 years of age who for many years had suffered from a multilocular cyst of the ovary for which nothing had been done beyond tapping. Just before death she was sitting up in a chair and died without any special symptoms. On examining the heart a small slit was seen in the anterior wall of the left ventricle close to the apex. This was the usual site for rupture to take place and the rapidity of death depended upon the size of the opening which in this case had been small.



DR. W. H. HAMILTON related the history of a case of *Malaria* under his care in the Royal Victoria Hospital and exhibited under the microscope the malarial parasite, one specimen showing segmentation. An interesting feature of the case was that the type had altered while he was under observation from the quotidian to the tertian form of the fever.

DR. TELFER read a paper entitled *A Preliminary Note on the Duration of the Elimination of Iodine by the Kidneys and Parotid Glands*.

DR. N. S. SHAW read the history of a case which he entitled a *Case for Diagnosis*.

DR. TAIT MCKENZIE read a paper on *Treatment of Lateral Curvature of the Spine by Exercise*. See page 745.

DR. ARCHIBALD enquired whether in extreme cases of scoliosis pure exercise was of benefit, or whether it had to be supplemented by pressure applied to the deformity.

DR. CHURCH asked if there was an age limit over which these exercises would not be useful in such deformities.

DR. MCKENZIE, in reply, said that in extreme cases where there was angular deformity he did not think exercise would have any effect. Here, by suspension and pressure, very considerable improvement could be obtained by developing the erector spinæ.

With regard to the age at which the individual could be benefited, the oldest case in which he had obtained improvement was a woman of 32, in whom merely teaching her the method of breathing and stretching the thoracic walls and ligaments in the dorsal region had been followed by very considerable improvement. As age increases the likelihood of improvement becomes less and less.

T H E

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

EDITED BY

THOS. G. RODDICK,  
A. D. BLACKADER,  
GEO. E. ARMSTRONG,  
WILLIAM GARDNER,  
F. G. FINLEY,

JAMES STEWART,  
J. GEORGE ADAMI,  
G. GORDON CAMPBELL,  
FRANK BULLER,  
H. A. LAFLEUR,

WITH THE COLLABORATION OF

WYATT JOHNSTON.  
C. F. MARTIN,  
J. M. ELDER,  
D. J. EVANS,  
A. E. GARROW.

T. J. W. BURGESS,  
J. W. STIRLING,  
F. A. L. LOCKHART,  
W. F. HAMILTON,  
E. J. SEMPLE,

H. S. BIRKETT,  
KENNETH CAMERON,  
C. W. WILSON.  
A. G. NICHOLLS,  
W. W. CHIPMAN.

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No. 10.

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## THE INJURY AND DEATH OF THE LATE PRESIDENT OF THE UNITED STATES.

The report of the illness of the President and of the conditions found at the autopsy has been published in full by several of the American medical journals. It is a creditable report, and is signed by all the physicians and surgeons who had been in attendance.

It shows that, thanks to the forethought and provisions made for the care of anyone injured on the grounds, by those in charge of the Buffalo exhibition, the President received prompt and efficient attention, that the physicians and surgeons worked together in harmony, and that everything was done for the distinguished patient that science could suggest.

The cause of death, however, cannot as yet be said to be fully determined. The wounds in the stomach were successfully closed, and there is no evidence that any leakage occurred after the closure. The suggestion that the bullets were poisoned has been disproved. There seems to be little or no evidence that there occurred a lesion to the sympathetic that could, with any degree of even probability, be assigned

as a cause of death. Much more can be said in favour of the suggestion that death resulted from the injury to the pancreas. Further evidence, either experimental or pathological, regarding the effects of injury to and disease of this viscus must be obtained before any positive statements can be accepted. One can hardly read the pathological report without wondering whether or not a drain inserted through the abdominal incision, or better yet, from behind through the loin just beside the injured kidney, would have altered the result. There is the positive evidence of the bacteriologist that the wounds and retro-peritoneal wound cavity were not infected. Drainage, therefore, could only have given a chance of escape to the serous exudate and pancreatic fluid if present.

One fact comes out very clearly, and that is that the medical attendants had to contend with a serious injury in a patient whose recuperative and reparative power was woefully low. An overworked man, with imperfect heart and kidneys, falls an easy prey to injury and disease.

#### NEW BOOKS, ETC., RECEIVED AND NOTED.

*W. B. Saunders & Company, Philadelphia and London. 1901.*

The Pathology and Treatment of Sexual Impotence. By Victor G. Vecki, M.D. Third edition, revised and enlarged, 12mo., 329 pages.

Nervous and Mental Diseases. By Archibald Church, M.D., and Frederick Peterson, M.D. Third edition, revised and enlarged, 8vo., 870 pages.

The American Illustrated Medical Dictionary. By W. A. Newman Dorland, A.M., M.D. Second edition, revised, large 8vo., 800 pages.

A Text-Book of the Practice of Medicine. By James M. Anders, M.D., Ph.D., LL.D. Fifth edition, thoroughly revised, 8vo., 1279 pages.

Modern Obstetrics, General and Operative. W. A. Newman Dorland, A.M., M.D. Second edition. 1901.

A Text-Book of Obstetrics. By Barton Cook Hirst, M.D. Third edition. 1901.

A Manual of the Practice of Medicine. By George Roe Lockwood, M.D. Second edition. 1901.

Human Physiology. By Joseph Howard Raymond, A.M., M.D. Second edition. 1901.

The Principles of Hygiene. By D. H. Bergey, A.M., M.D. 1901.

Dose-Book and Manual of Prescription-Writing. By E. Q. Thornton, M.D. Second edition. 1901.

A Laboratory Course in Bacteriology. By Frederick P. Gorham, A.M. 1901.

Saunders' Medical Hand-Atlases. Atlas and Epitome of Special Pathologic Histology. By Docent Dr. Hermann Dürch, of Munich. Edited by Ludvig Hektoen, M.D. Vol. II. 1901.

Pathological Technique. By Frank P. Mallory, A.M., M.D., and James H. Wright, A.M., M.D. Second edition. 1901.

A Text-Book of Diseases of Women. By Charles B. Penrose, M.D., Ph.D. Fourth edition. 1901.

*The Johns Hopkins Press, Baltimore. 1901.*

The Johns Hopkins Hospital Reports. Vol. X., Nos. 1 & 2.

*J. W. Arrowsmith, Bristol.*

Bath Waters: A Rational Account of their Nature and Use. With Special Reference to Gout, Rheumatism and Rheumatoid Arthritis. By Preston King, M.D. (Cantab.). With an Historical Sketch by S. Baring Gould, M.A.

*Bailliere, Tindall & Cox, London, Paris, Madrid. 1901.*

Syphilis and other Venereal Diseases. By H. de Méric.

*Published for the Society.*

Proceedings of the New York Pathological Society for the Years 1899 and 1900.

*John Bale, Sons & Danielsson, Ltd., London.*

Renal Tension and its Treatment by Surgical Means. By Reginald Harrison, F.R.C.S.

Some Retrospects and Prospects in Surgery. By Reginald Harrison, F.R.C.S.

*Bailliere, Tindall & Cox, London.*

The Pocket Gray or Anatomist's Vade-Mecum. By the late Edward Cotterell, F.R.C.S. Fifth edition, revised and edited by M.B., M.S. (Lond.), F.R.C.S. 1901.

*H. K. Lewis, London.*

Gonorrhœal Arthritis. By L. Vernon Jones, M.D. 1901.

Elements of Practical Medicine. By Alfred H. Carter, M.D., M.Sc. Eighth edition. 1901.

*P. Blakiston, Son & Company, Philadelphia.*

Materia Medica, Pharmacy, Pharmacology and Therapeutics. By W. Hale White, M.D., F.R.C.P. Fifth American edition. Edited by Reynold W. Wilcox, M.A., M.D. 1901.

*Rebman, Limited, London.*

International Directory of Laryngologists and Otologists. Compiled by Richard Lake, F.R.C.S., Eng. Second edition. 1901.

*Chicago Medical Book Company, Chicago.*

The Peritoneum. By Byron Robinson, B.S., M.D. Part I. Histology and Physiology.

*Pamphlets and Reprints.*

On Tenontitis and Tenontothecitis Prolifera Calcarea. By Carl Beck, M.D. New York Med. Jour., April 27, 1901.

Ueber die Fractur des Processus coronoideus ulnæ. Von Dr. Carl Beck. J. B. Hirschfeld in Leipzig.

Ueber Sarkombehandlunb mittels der Roentgenstrahlen. Dr. Carl Beck. Munch. Med. Wochen, No. 32, 1901.

Ueber deform geheilte Frakturen und ihre Behandlung. Von Dr. Carl Beck. Munch. Med. Wochen., No. 17, 1901.



The Primary Treatment of Infected Wounds with Tincture of Iodine. By Carl Beck, M.D. William Wood & Co., New York.

Ueber die Darstellung von Gallensteinen mittelst der Röntgen strahlen, nebst Bemerkungen ueber die Erbllichkeit der Prädisposition zur Gallenstein-krankheit. Von Dr. Carl Beck, Berliner klin. Wochenschr., No. 19, 1901.

Metatarsal Fracture. By Carl Beck, M.D. American Medicine, April, 1901.

Osseous Cysts of the Tibia. By Carl Beck, M.D. Amer. Hour. of Med. Scien., June, 1901.

Fracture of the Carpal End of the Radius, with Fissure or Fracture of the Lower End of the Ulna and other Associated Injuries. By Carl Beck, M.D. Annals of Surgery, Aug., 1901.

Beitrag zur Diagnostik und Therapie der Struma. Von Dr. Carl Beck. Forts. auf dem Gebiete der Röntgenstrahlen. Band IV.

Congenital Malformations of the Upper Extremity. By Carl Beck, M.D. N.Y. Med. Jour., June 29, 1901.

Report of the Committee on Heredity, The Society for the Study of Inebriety. H. K. Lewis, April, 1901.

Syphilis as a Non-Venereal Disease. L. Duncan Bulkley, A.M., M.D. Jour. Amer. Med. Association, April 6, 1901.

Progressive Pernicious Anæmia. By Alfred Stengel, M.D. The Med. News, Oct. 20, 1900.

Some Notes on the Treatment of Rheumatism. By Alfred Stengel, M.D. The Med. News, Dec. 22, 1900.

A Review of the History of Cardiac Pathology. Modern Conceptions of Myocardial Disease. By Alfred Stengel, M.D. University Med. Mag., Oct., Nov., 1900.

Aneurism of the Arch of the Aorta with Rupture into the Superior Vena Cava. By Alfred Stengel, M.D. Amer. Jour. of Med. Sci., Nov., 1900.

The Throat and Nose in Scarlet Fever. By W. Cheatham, M.D. Louisville Jour. of Med. and Sur. Mar., 1900.

Porro-Cæsarean Hysterectomy. By Amand Routh, M.D., B.S., F.R.C.P. Adlard & Son, 1900.

The Medical Treatment during the Adolescent Period. By Edwin Rosen-  
thal, M.D. Med. Fortnightly.

Affections of the Eye and its Appendages in Bright's Disease. By W. Cheatham, M.D. Amer. Prac. and News, March 15, 1901.

Cyclic Albuminuria. By G. A. Sutherland, M.D. Med. Publishing Co., London, 1900.

A Scientific Basis for Medicine. By E. C. Hebbard, M.D. The Med. Times, March, 1901.

Two Hundred and Thirty-Seven Consecutive Abdominal Sections. By C. G. Davis, M.D.

# THE MONTREAL MEDICAL JOURNAL.

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NOVEMBER, 1901.

No. 11.

## Original Communications.

### THE PRESENT EPIDEMIC OF SMALLPOX IN AMERICA.\*

BY

H. M. BRACKEN, M.D.,

Secretary, Minnesota State Board of Health ; Professor of Materia Medica and Therapeutics, University of Minnesota, Minneapolis, Minn.

Some time ago I was asked by your president to prepare a history of the present smallpox epidemic in Minnesota for this meeting. I promised so to do, not because I thought you would be interested in such as a local condition, but because the history of this epidemic is in all probability the history of each and every epidemic in province or state of Canada or the United States during the past five years.

In March, 1899, a porter from a Great Northern Railway train was found ill with smallpox in St. Paul, after his return from the Pacific coast. His infection occurred at some point between St. Paul and the coast, probably at Seattle. At the time his case was diagnosticated as smallpox, he remarked, "If such is the case, there is plenty more of the same thing in the place that I came from."

From exposures to this case, there followed thirty-one cases of smallpox in St. Paul, with but one death. The outbreak was well handled by the very efficient health commissioner of that city, Dr. J. Ohage. I did not see any of these cases.

In May, 1899, a gentleman, aged about fifty years, returned from California to his home at Worthington, Minnesota. On his way home he stopped in Nebraska for a few days. There was quite a little smallpox in that state at certain points during the winter of 1898 and 1899. This gentleman had after his return to Worthington an eruption so mild in type that no physician was called, I understand. I believe some parties thought he had chicken-pox. In due time the wife was taken ill.

\* Read before the Canadian Medical Association, August 20, 1901.

At first her disease was thought to be measles, but in a few days it was recognized as smallpox of severe type. After but a few days' illness, she died.

The physician called to attend this lady, after her disease was recognized as smallpox, went into voluntary quarantine with this infected family, for the good of the community. He was not immune to the disease, and in consequence became infected and died.

In all, there were at this place eight cases of smallpox from this infection, with two deaths. The disease occurred in varying degrees in these cases, from the very mild type in the father and grandmother, to the confluent form in the mother and attending physician.

Late in June, 1899, I was called to East Grand Forks to give an opinion as to the nature of the disease from which a man was suffering. My diagnosis was smallpox. The man was quite ill, though not dangerously so, and in about the fourth or fifth day of the eruption. I was then asked by a physician to see a boy in Grand Forks ill with an eruptive disease. I again made the diagnosis of smallpox. The eruption in this case was markedly confluent and the patient dangerously ill. When my diagnosis was given out, certain physicians of prominence disputed its correctness. I stated that if two of them—excellent men—would visit the boy in their own city (Grand Forks) and would still say that the disease was not smallpox, I would hold my opinion in abeyance and watch developments. They visited the case and still gave it as their opinion that it was not smallpox. I thereupon repeated my opinion that this boy had smallpox and that he would soon die, and stated that I would be interested to know the cause of death that would be given on the death certificate. I further stated that the East Grand Forks case should be quarantined as for smallpox. The Grand Forks patient died in less than thirty-six hours from the time the last negative diagnosis was made by the two resident physicians referred to. Before his death, however, the health officer of the city and the superintendent of the state board of health, both of whom were absent at the time of my visit to Grand Forks, returned to their homes; both pronounced the case as one of smallpox. From this time on, the disease in both Grand Forks and East Grand Forks was without dispute recognized as smallpox and the little epidemic was quickly suppressed. The perplexing elements in this epidemic were:—first, the fact that an eruptive disease of very mild type had appeared first among the telephone operators. It was thought that these mild cases were in all probability of the same type as these severe cases, which certainly had all the earmarks of smallpox, and it was hard to believe that they could possibly have been smallpox. The history given by these recovered patients was

very vague. Second, the boy in Grand Forks who died of smallpox gave a history of possible exposure to poisons that might have caused an eruption quite similar to that shown at the time of our visit. After careful study of all these cases there was, however, but one conclusion that could be accepted, viz., that all had one and the same disease, smallpox, varying greatly in type and severity.

On August 31st, 1899, a health officer in Southern Minnesota wrote me that two young men, proprietors of a grocery store, had an eruptive disease which he diagnosticated chicken-pox. I replied at once, drawing his attention to the rarity of chicken-pox in adults, and advising him to quarantine the cases. My advice was not heeded. September 27th, I was called by a physician to this same place to see a suspicious case. A boy had consulted him with an ulcerated cornea. The physician noticed some bluish marks upon the face of this patient. Further examination showed similar marks upon other parts of the body. The corneal ulcer was recognized as the remnant of a smallpox vesicle. Investigation showed that there had been a number of cases of smallpox in this little city, the first one occurring early in July and being that of a young man from Grand Forks, who was home on a visit to his mother. The disease had remained isolated until the two young grocery men contracted it and carried it to their store to distribute with their goods to the entire community. At the time of this visit I found two very typical cases of smallpox, one being a man who had been under treatment in hospital for a compound fracture of the leg and had there contracted smallpox (the same source of infection as that for the boy with the corneal ulcer). He was at about the seventh day of the eruption: the other a young lady in the second day of eruption. In this latter case the eruption was quite extensive, and being governed by previous experience with smallpox, I predicted for her that she would undoubtedly be very sick during the progress of her disease. In this I was wrong. It could hardly be said that she had a sick day after that upon which I visited her. The temperature quickly fell to normal. The patient was decidedly marked with pigmented spots after her recovery from the disease. I have not seen her for nearly two years, but I venture to state that, judging from my knowledge of other cases, she in all probability shows but little marking from the disease at this time. The prediction I made as to the seriousness of this case was unfortunate, for the unbelievers in my diagnosis of smallpox used this as an argument against my ability to recognize this disease when present.

Much opposition to quarantine regulations, and in fact, to the diagnosis of smallpox, existed at this place. In consequence, the disease was not brought under control as it should have been. It continued in



the city for a period of nearly a year; it spread from this place far and wide through Southern Minnesota and Northern Iowa. In the city itself there was a total of one hundred and one (101) *recorded* cases from this exposure, *without a single death*. There were, however, four deaths at other places traceable to infection at this point. This was my first, but not my last experience with epidemic smallpox, with a phenomenally low mortality.

In August of 1899, a physician and health officer wrote me that his little girl was quite ill with vaccinia. He described in his letter the eruption upon her person. I replied to him at once, urging him to be on his guard, stating that in all probability his child had been exposed to smallpox before she was vaccinated, and was suffering from this latter disease, rather than from vaccinia. He paid no attention to my warning. A few days later, at the request of a physician in a neighbouring village, I visited this child with him and found her very ill with confluent smallpox.—so ill, in fact, that she died within a few hours of our first seeing her. Her father still insisted that she did not have smallpox. There had been much exposure to this child. As a result in this little village there were in all twelve cases, with four deaths. Close inquiry brought out the fact that the father of this child was taken ill July 4th with symptoms that were undoubtedly the *prodromata* of smallpox, and that following these symptoms, he had an eruption, the nature of which he failed to recognize. He undoubtedly had smallpox and infected his child.

In October, 1899, a young woman from Carver County visited a sister who was a servant at the B—— Hotel, in Minneapolis. At the time she was just recovering from a rash which she stated was due to chicken-pox. She also stated that the whole family had the same disease. Later developments proved this in all probability to have been smallpox. Where it came from I have not been able to determine by correspondence, nor have I had time to visit the place myself in order to trace its origin, if possible. After the return of this young woman to her home, her sister (the servant) went home, and also had what was called chicken-pox. A few days later another servant in the same hotel was found to be ill with an eruptive disease which was diagnosticated as smallpox by Dr. Norred, and sent to the Minneapolis pest-house November 1st.

A clerk of one of the leading dry goods houses had a meal ticket at the B—— Hotel, where the girl who was sent to the pest-house Nov. 1st was a waitress. In due time this young man had a rash which was not diagnosticated. Others in the same store had this same disease, and as the Thirteenth Regiment returned from the Philippines about this

time it was given the name of "Philippino Itch." From these parties there was quite an infection which was later recognized as smallpox, and the poetry of Philippino infection was removed, for it came from no more distant place than the B—— Hotel through the waitress. A man living at 15 W—— Ave., and boarding at the B—— Hotel had what was called chicken-pox. He passed the disease from one to another at his place of rooming until finally one infected young man went to Janesville, Minn., where he had smallpox. Inquiry there elicited the fact that a case of smallpox had first been recognized in this house on W—— Ave. by the husband of the patient. A physician confirmed this diagnosis, and reported the fact to the health office. The commissioner of health is said to have visited this place, and to have pronounced the disease nothing but chicken-pox. Smallpox under the name of chicken-pox made various excursions from 15 W—— Ave. Among the places visited were Wahpeton, N.D., and Hoff Township, Pope County, Minn. In this latter place there was one death from hæmorrhagic smallpox. Although several diagnoses of smallpox had been made by competent physicians in Minneapolis, to be marked and called chicken-pox by the then commissioner of health, it was not until January 23, 1900, that the city was forced to recognize the presence of smallpox. To November 1, 1900, there were in Minneapolis 448 cases with 13 deaths. There were known to be 53 localities in 23 counties with a record of 543 cases with 5 deaths, or a total of 991 cases with 18 deaths, due to Minneapolis infection.

But why relate other outbreaks? These are enough for illustrative purposes. The disease has continued in Minnesota up to the present time with the common epidemic history of first, mild unrecognized cases, with later severe cases, easily recognized, and with disputings among physicians, even after the disease has assumed such a marked type that the medical tyro should have recognized it, had he reasoned from the positive rather than from the negative standpoint.

For convenience these cases are divided into seven groups according to severity as follows:—

1. Smallpox, without eruption.
2. Very mild smallpox.
3. Mild smallpox.
4. Mildly severe smallpox.
5. Severe smallpox.
6. Confluent smallpox.
7. Malignant smallpox.

Dr. Geo. D. Haggard, who had opportunity to watch many smallpox cases in Minneapolis, has given such an excellent description of the

symptoms of smallpox as it is now prevailing that I simply quote him as follows :—

“Of the early symptoms, fever, the one most constantly present, may be overlooked entirely in children, or recognized only as fretfulness. It may also happen in the mild cases that the fever will accompany but not precede, the eruption in children. In the severer forms of the disease fever is almost always, if not always, present. If the case is malignant the temperature may be subnormal for days at a time, especially after the eruption has appeared. In some severe cases the temperature fall may be momentary only, the fever being practically continuous throughout the course of the disease.

“Chills are very inconstant. They may be the first prodromal symptoms; they may be alternating in close succession. They have been absent or unrecognized in a large proportion of cases.

“Pain in the lumbar region is quite constant as an early symptom in the severe cases the pain in the back continues after the eruption appears. In the mild cases headache is a prominent early symptom. Associated with the early headache may be general pains. The first pains may be in the feet and legs. There are sometimes fleeting pains appearing in the head, the back, the legs and then in the abdomen. In the severe cases the pain in the back continues after the eruption appears. Sore throat is a common symptom in all the types of smallpox described. It may be the earliest symptom; it may appear with the eruption or even later, then disappear promptly, or develop into a most annoying condition. There may be only a diffused redness, or the eruption may cover the entire pharyngeal surface. The throat has sometimes an apparently diphtheritic, gangrenous slough on the tonsils, severe adenitis, with pain and dysphagia. There may be aphonia, or the hoarse whisper of “croup,” and choking that alarms the attendants. The breathing, for days, may be like that of a severe diphtheria, in which the nose is stopped and the fauces closed at the end of each inspiration and expiration. The peculiar odor which is said to attend smallpox is noted only in the cases of some severity. It is of such a character and appears so early in the disease as to be of material benefit in making a diagnosis. This early odor is unlike that which comes later, the odor of suppuration.

“In some cases there is severe sweating at about the fifth to the seventh day of the disease, and this is accompanied by a great stench irrespective of the extent of the eruption.

“The tongue, quite constantly, has a fine, white coating, with the shape and palor so common in atonic diseases. In the severe cases it often has the appearance of the so-called typhoid fever tongue. In the

milder cases the tongue may have no vesicles upon it, or only a few, as in chicken-pox; but in the severe cases it may be thickly covered with the eruption. Loss of appetite is a common early symptom, and may be somewhat prolonged in the severe cases. Nausea or vomiting, or both, are common early symptoms, and these two may continue to be present for some time in the severe cases.

"Weakness is often extreme when the duration of illness is taken into account. Diarrhœa is a somewhat common symptom in all forms of the disease, but is most marked in the severer forms. Constipation is sometimes present, possibly in twenty per cent. of the cases.

"Sleeplessness is present in probably half the cases, lasting but a few days in the mild type, but quite persistent in those more seriously ill. In these latter the use of the milder hypnotics seems to have but little effect.

"Convulsions occur in children in the early stages of the disease. Delirium is often present and is most frequent in the early or febrile period. Tremor of the hands is a common symptom, occurring after the fifth day, slight in the mild, but in an aggravated form in the severe cases.

"With so many grades of severity, and with the varying reaction of the skin, a great range in the degree of the eruption is not strange. This creates much confusion and discomfiture in the minds of physicians who have had little experience with the disease. It is not uncommon to find a diagnosis of grippe, typhoid fever, measles, scarlet fever, or even erysipelas, made before the correct diagnosis is reached. In several cases of purpuric variola the disease has been classed as purpura hæmorrhagica, or 'black measles,' or 'heart failure,' or 'gastric catarrh.'

"It is necessary to be guarded in making a negative diagnosis when smallpox is prevailing in mild form. The patient and his friends are generally certain that the mild cases cannot be smallpox. The patient is said to have been 'working too hard,' or to have 'cooled off too soon,' or to have 'ridden too far on a wheel,' or to have 'had such attacks before.' He is subject to 'lumbago.' The eruption is 'due to the heat,' to 'medicine taken,' or to 'bad blood.' If the physician sees the patient but once he is apt to make a diagnosis of grippe, rheumatism, typhoid fever, or cold. If he makes later visits he is very likely to find an eruption that does not belong to any of these diseases, and which as certainly is not chicken-pox.

"One must not adhere too closely to the classical description of smallpox eruption, for he may be misled. In the mild cases there may be only a few broad and flat papules of irregular outline and uneven size. These reach the stage of involution so early that the case is out of



quarantine in half the usual time. For example: A child aged five years was vaccinated a few days after exposure to his father, who was ill with smallpox. Thirteen days after such exposure there were marked prodromal symptoms of smallpox. Later four papules appeared upon the child's neck, and these increased in prominence for two days, then decreased for a like period of time, and disappeared without vesiculation.

"In other cases, after the severe prodromal symptoms, an eruption, thick set and hæmorrhagic, may appear. There may be marked prostration and delirium. By the fourth or fifth day of the eruption all symptoms may change for the better, and the patient's case progress as a typical varioloid.

"There were mild cases without previous vaccination, and hence mild in character independently of any influence from vaccination. There were still other cases with a mixed eruption. Thus M. and E., sister and brother, aged respectively eleven years and ten months, were ill. The histories of these two cases were practically the same. There was fretfulness, fever, malaise, sore throat, headache on the third day, a macular eruption of irregular size, and most marked on the head, hands and feet. From the centre of many of these maculæ there developed, within twelve to twenty hours, a small dome-shaped transparent vesicle, with thin top, which would break within the next twenty-four hours, leaving the usual flat, dry, dark scab, of irregular size, so characteristic of chicken-pox. But accompanying these typical prodromal symptoms of smallpox, with the rash of chicken-pox, was another eruption of papules going on to vesiculation slowly, as in smallpox, full and tense at the end of a week; mostly round, but occasionally oval; refilling quickly when emptied. These had thick tops and a hyperplastic base. There was an elevated ring left when the usual smallpox scale dropped off.

"The following complications were met with in one or more cases: Brachial paresis preceded by a neuritis; severe inflammation of the eyes, lasting from seven to ten days; suppurative otitis media; impetigo following the desquamation; facial erysipelas following the secondary fever (in one case); burrowing abscesses over back, sacrum and buttocks. There were small wounds of the skin, which showed no disposition to heal so long as the eruption was active. In one case the nails dropped off, and this was in progress when death occurred in another case. In one case there were bed sores. Many of the severe cases had a crop of pimples following the desquamation. Inflammation of the glands of the neck, of the groin or of the axillæ was noted in many of the cases. Accompanying this was chills, irregular temperature, and local pain. There was a marked variation in the size of these glandular and periglandular swellings, which advanced and receded from day to day. The

skin was not so brawny over these glands as is usual in such inflammations. The softness and mobility of the glands was striking. Upon the rapid recession in size of the glands, without rupture, the skin would lay in folds where it had previously been tense. The disorders of the alimentary canal were mostly following the secondary fever, and were represented by gastroduodenitis, accompanied by jaundice or by gastroenteritis."

Up to August 12th, 1901, there have been recorded since January 1st, 1899, nine thousand, four hundred and ninety-seven (9497) cases of smallpox in Minnesota, with sixty-seven (67) recorded deaths. Of these, six thousand, two hundred and eighty-eight (6288) cases and twenty-nine (29) deaths have been recorded since January 1st, 1901.

It may be well for us to consider whence came this disease and why does it differ so from the classical history of smallpox epidemics.

It is impossible to locate positively the source of this widespread epidemic. By some it is said to have originated in Cuba. Certain it is that smallpox of the present mild type was in Florida, Alabama and Tennessee early in 1897. In all probability it spread from the Southern to the Western states, for there was smallpox of this mild form in Texas, in Nebraska, probably in the state of Washington, in Montana and other western states prior to January 1st, 1899. The first known case of this present epidemic coming to Minnesota was that of the coloured porter on the Great Northern Railway.

Prior to October 1st, 1899, at least two cases (St. Cloud and Willmar) came to Minnesota from Montana, and the disease was quite general in North Dakota before it became general in Minnesota. The case that was found in full bloom at the Willmar railway station September 16th, 1899, received his infection in a hospital at Great Falls, Montana. It had not been recognized by the attending physician as smallpox. The patient was allowed to leave Great Falls when fully and extensively broken out, and was advised by the attending physician (so it was stated) to keep out of the way of physicians while on his trip, *for the eruption resembled smallpox*, and there was a possibility that he might be removed from the train and placed in a "pest-house" before he should reach his intended destination (precisely the thing that was done). In reply to an inquiry sent from Minnesota to Great Falls, Montana, relative to this disease which they were importing into this state, which we called smallpox, a very capable physician stated that an eruptive disease was prevailing at that point, over which the physicians were disputing. His own cases he was quarantining as smallpox without making a positive diagnosis. Other physicians, however, were said to be treating cases in the general hospital. He further

stated "if this is smallpox, then all of northern Montana is affected. It may be that the disease is modified in some way by the climate of this section." (Later developments point to the fact that this was undoubtedly smallpox of the type so common over the entire country since that date, and that some cause other than climate must be sought to account for its mildness.) Shortly after this letter was written, several deaths from smallpox occurred in and near Great Falls.

In January, 1900, smallpox was introduced into Duluth from Texas.

It is thus seen that into the one state, Minnesota, smallpox of mild type was introduced from three distinct points, Nebraska, the line of the Great Northern Railway, and Texas, within a period of one year, and it is quite probable that all three of these sources received their original infection from a common source, probably the Southern states, Florida or Alabama.

It should be noted that as early as 1895, there was a local outbreak embracing twenty-five cases of smallpox at Midway (a section of St. Paul), with but one death. The infection for this outbreak is said to have come from Green Bay, Wis. How the disease reached that point I do not know.

It is common to hear from people, who have not given the subject much study, the statement that the disease was brought home by the soldiers returning from the Philippines and from Cuba. This is not the fact. The disease was widely epidemic in Southern and Central states before a single soldier had been sent to either of these places. It was epidemic in many of the North-western states before a single soldier had returned from the Philippines. It is quite probable that the disease was imported from Cuba by Cuban refugees before hostilities had broken out between the United States and Spain.

It is amusing, although at the same time annoying, to note the names that have been substituted for this old-fashioned, well-described disease, smallpox. Among these are such pleasing suggestions as Cuban Itch, Manila Itch, Philippino Itch, Yaws, Pseudo-Smallpox, Modified Smallpox, etc., *ad nauseam*. With much reading I have failed to find any disease described under these first three attractive names. "Yaws" is the name of a disease that should no more readily be confused with smallpox than should syphilis. It is a disease not at all common in the United States and probably never seen by many of those who are using the term. To call it pseudo-smallpox is a dangerous practice, for it conveys the idea, as it is meant to by those who use the term, that the disease is not smallpox. The term "modified smallpox," may with propriety be used, so long as it is understood that by this is meant smallpox in modified form.

When we try to explain the reason for the present mild form of small-pox, we find before us a difficult task. We know that with all communicable diseases there are epidemics in which the severity of the disease differs greatly. There may be epidemics of typhoid fever in which the number of walking cases represent a large proportion of the whole, or on the other hand, in which the mortality is very great. There may be epidemics of scarlet fever of so mild a type as to almost pass without notice, or on the other hand, in which a very large percentage of the cases may die. The same may be true of measles. Why should it not also be true of smallpox? But there may be another reason for the mildness of the disease. Dr. J. Nevins Hyde, in an article written December, 1899, says: "The mildness of the present epidemic of small-pox can be accounted for rationally only on the basis of the very general practice during the last fifty years of vaccination of our people. Instead of being astounded at the result, we should greet it with a degree of satisfaction. It is the fruit of a century of progress." I must admit that this argument is a very plausible one. It certainly has been demonstrated time and time again during the present epidemic that vaccination does protect, and while there are many individuals at the present time who have never been vaccinated and yet do not have small-pox after an apparent exposure, these have great reason to be thankful for the protection conferred upon them by their ancestors.

Prior to 1798, smallpox was regarded as the king of diseases. It is said to have been the cause of one-tenth of all the deaths amongst human beings, while in addition to this, "many who outlived its ravages were disfigured, blind or invalided for the rest of their lives."

MacCauley says "Smallpox was always present, filling the churchyards with corpses, leaving on those whose lives it spared the hideous traces of its power, turning the babe into a changeling at which the mother shuddered, and making the eyes and cheeks of the betrothed maiden objects of horror to her lover." He further called smallpox "the most terrible of all the ministers of death."

Alexander McKenzie describes it in an unprotected community as "a fire consuming the dry grass in the field."

Europe, in the century preceding the discovery of vaccination, lost in deaths from small-pox alone fifty million of her population, or an average of five hundred thousand per annum. The mortality from smallpox at the present time in all civilized countries is as nothing compared with these pre-vaccination times. The mortality from small-pox in well-vaccinated countries is practically nil. To whom belongs the credit for this changed condition? To the immortal Jenner. And yet there are those who malign vaccination and the father of vaccination;



anti-vaccinationists, they are called. Shame upon them ! How many of these erratics would wish to return to the pre-Jennerian era ?

While it is absolutely proven that vaccination protects in the large majority of cases of smallpox; while it is altogether probable that at least in part the mildness of the present epidemic of smallpox must be due to an acquired immunity, transmitted by our well-vaccinated ancestors, it must be admitted that such transmitted immunity is not complete protection. In many instances that have come under my observation during the past two years, the first cases of smallpox that appear in a community have been of the mild type, but these have been followed by more severe, and in many instances, fatal cases. We cannot rest entirely upon the good done by our ancestors. We, too, must act and *vaccinate, vaccinate, vaccinate !*

Since this mild type of smallpox has become so widespread, I have tried to find some history of a previous similar epidemic and have failed. This is not surprising. In the pre-Jennerian era there were no immunizing influences at work. During the early years of the Jennerian era, vaccination became general in the British possessions, in America and in the various European countries. The inherited immunity has become quite well established. In consequence, we have the present type of the disease. But the mildness of the disease is not sufficient excuse for failing to recognize it.

The doubters and unbelievers have been telling us that these mild cases of smallpox are not described in our text-books. Let us see if what they say is true or whether the picture of the disease which they have in their own minds is blinding them to actual facts.

Sir Thomas Watson, in speaking of smallpox, says: "The discreet form is scarcely ever dangerous; the symptoms largely depend upon the amount of the eruption; the secondary fever is but slightly marked in the discreet form; sometimes there are not more than half a dozen pustules; sometimes there are many thousands."

Flint says: "Not every smallpox vesicle is umbilicated; in mild cases there may remain no permanent traces of the eruption; some of the pocks do not break, but harden and their contents are absorbed. It is probable that in these cases the corium is not involved in the suppuration, or that the vesicles are not converted into pustules. Some persons are wholly insusceptible (without vaccination); some have become susceptible after having been insusceptible for many years."

Osler says: "Whether pitting takes place depends a good deal upon the severity of the disease. In the majority of cases Sydenham's statement holds good that 'it is very rarely the case that the distinct (discreet) smallpox leaves its mark.'"

In Ziemssen's Cyclopædia it is stated by Curschmann that "the variations may present the most extreme limits from the severest and absolutely fatal, to the very lightest cases, in which but a few small pustules reveal the fact that we are dealing with a sick patient. None of these forms are sharply defined amidst the great group of variolous affections. Under various forms of this disease are described *Variolois verrucosa*, in which the eruption does not develop into large, well-formed pustules, but remains in the form of solid conical papules, which have a small vesicle at the summit containing fluid; and again—*Variolois miliaris*, yellowish vesicles the size of millet seed, which disappear by simply drying up."

Dr. Wm. M. Welch says (Loomis-Thompson's System of Practical Medicine, Vol. 1): "There may be only a few small pustules, scarcely definite enough to verify the disease. Discreet variola is attended by no great danger. It is well known that in some unprotected persons there is naturally but slight susceptibility to infection and the disease in this class is mild and of short duration."

In Albutt's Practice it is stated that from one to two per cent. of the unvaccinated are immune to smallpox. Some say one to five per cent. Modified smallpox occurs in well-vaccinated communities.

Moore, of Dublin (Twentieth Century Practice), says: "Many individuals have only this form of smallpox (mild) because of a naturally slight susceptibility to the contagion of the disease."

Hyde, in his recent article, says: "The most significant and startling contrast between modified and unmodified smallpox is exhibited when the patient, after reaching the stage described of complete development of pustules, suddenly ceases to betray any further significant symptoms of smallpox. The pustules dry rapidly into crusts which are thrown off and leave the skin either somewhat stained at the points where the crusts formed, or in nearly its normal condition."

Is there not meat in these quotations upon which the doubters may feed to good purpose? It is worthy of note that those who dispute the diagnosis of smallpox in these mild cases of the present epidemic are much fewer in number than a short time ago. He is a bold man who will place his opinion, when he is first called upon to see one of these mild cases, against that of those who have become thoroughly familiar with the disease and its eccentricities. Mistakes are excusable, but persistent opposition in the face of accumulated positive proofs is never excusable.

Much good was done at the recent meeting of the American Medical Association, when there was passed with but one dissenting vote, at a well-attended joint session of the Sections on the Practice of Medicine,

Hygiene and Sanitary Science, the following:—"Resolved, That the disease now prevailing extensively in the United States, and called in some instances 'pseudo-smallpox,' is genuine smallpox, and should be so treated with vaccination and quarantine."

At no time in the history of the world have the conditions been more favourable for the spread of smallpox in mild form than the present. Our facilities for travel tend to spread the disease. This is especially true in America, for we are a travelling people. Even the labourer migrates from state to state and from province to province with greater ease than people made journeys of fifty miles in the pre-Jennerian era.

It is impossible to give accurate statistics for an epidemic while it is still in progress. Suffice it then to say that a recent journal gave as the total number of cases of smallpox for the United States, since the beginning of the epidemic, as thirty thousand. I venture to say that if all cases in all the states had been reported, the total would exceed a hundred thousand.

I have told you when and how smallpox first appeared in Minnesota. Let me also quote from reports for a few other places. Smallpox existed in Florida, January, 1897; in Alabama, March, 1897; in Tennessee, April, 1897; in Georgia, October, 1897; in South Carolina, January, 1898; in North Carolina, January, 1898; in Kentucky, February, 1898; in Virginia, February, 1898; in District of Columbia, February, 1898; in Ohio, April, 1898; in Pennsylvania, April, 1898.

(One report says that the disease had existed for two years prior to 1897 among negroes in Alabama, unrecognized as such by physicians).

Infection for both Kentucky and Alabama is given as Cuba. The march northward is distinctly shown by the dates appearing one after another.

In 1898, New York state is said to have had three hundred cases, all traceable to one source of infection, a travelling show. In this number there was but one death.

The march westward seems to have been by way of Arkansas, for in January of 1898, a case is reported as occurring at Little Rock.—a negro woman from Birmingham, Alabama. Undoubtedly it was this infection that extended to Nebraska. Arkansas was also infected by way of Mexico. (Epidemic at Fair Oaks, March 1st, 1898, the first case coming from Mexico, February 7th, 1898).

It was quite possible for Texas to have had her infection from some one of the Southern states or from Mexico, and for the disease to have reached the Pacific shore of the United States from any of these sources.

In the Province of Quebec, from reports it would appear that there had been four epidemics since January, 1897.—the first July 5th, 1897,

to April 8th, 1898, with 26 cases and 14 deaths in Montreal, and 9 cases and 2 deaths outside of Montreal. The source of infection is not given in the reports, but it undoubtedly was not from the Southern states at this early date. This outbreak seems to have been of the old-fashioned severe type. The second, in districts outside of Montreal, between January 9th to April 1st, 1899. Fourteen cases are recorded, with one death. The infection is given as from a so-called chicken-pox case, but the source of the infection for this improperly diagnosed case does not seem to have been known. This outbreak represented the mild type of the disease, and was in all probability introduced by way of the States.

The third epidemic existed from November, 1899, to September 27th, 1900. Twenty cases were reported from Montreal, with seven deaths. Two hundred and ninety-seven cases were reported as occurring outside of Montreal, with but three deaths. The source of infection for this epidemic is given as New Bedford, Mass., Taunton, Mass., Bradford, Pa., and "a tramp."

The fourth outbreak is recorded from March 4th to May 27th, 1901, and seems to have been of the characteristic mild type prevailing throughout the United States, for there were reported three cases in Montreal, with no deaths, and two hundred and twenty-three cases outside of this city, with but two deaths. The sources of infection for this epidemic are given as Duluth, Michigan, Ontario, Wisconsin and Massachusetts.

There is a report in the *Journal of the American Medical Association* (August 10th, 1901, p. 396), of three hundred and thirty-seven cases in the Province of Quebec from January 1st to August 1st, 1901, with but one death. This seems to be a more recent record than that given for the four epidemics referred to in this Province, which is up to May 27th, 1901, only.

The Province of Ontario seems not to have been free from smallpox since January, 1898. The sources of infection given are from various parts of the States, as well as from certain points in the Province itself. The records that I quote for Ontario report five hundred and thirteen cases, with eighteen deaths (January 25th, 1898, to May 5th, 1901). The disease was apparently of the mild type prevailing in the United States.

I have no record for other provinces in Canada, but there certainly is no reason why those bordering on the North-western states should not have had many cases similar to those found in North Dakota, Montana, Wyoming and Washington.

There is quite a tendency to predict a more severe type of the disease to follow in the wake of this mild type. It would be strange indeed if



such a result did not follow. It is not safe, however, to make any such predictions for the near future. It is surprising that the disease should have already been present in the United States for a period of at least five years, with so little change in its character for the worse.

It may be well to again quote from the *Journal of the American Medical Association* (August 10th, 1901, p. 395), where the mortality from smallpox in New York state is given as seventy-four for the month of June, the highest mortality from smallpox for any one month in the history of the state. It would seem that New York is already showing evidence of a change in the type of the disease.

Finally, in closing, let me name the three cardinal points to be observed in suppressing smallpox: *Vaccination*, *Isolation* and *Disinfection*.

## SCLEROTIC ENDOCARDITIS : AN UNDIAGNOSED HEART LESION.\*

BY

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Montreal General Hospital.

On November 16th, 1900, I brought before this Society a child who was suffering from some cardiac lesion, the nature of which it was difficult to determine, and the report of the case was published in the *Montreal Medical Journal* for January, 1901. After having had an opportunity of examining the child in the anteroom, several of the members present at that meeting expressed opinions regarding the nature of the case, the diagnoses suggested being aortic regurgitation, a congenital lesion of the heart causing stenosis of the pulmonary artery, and mediastino-pericarditis. The last of these agreed with my own opinion, which I based mainly upon an experience of a somewhat similar case, which eventually came to autopsy and exhibited this condition.

Briefly, the physical signs then present were : bulging of the chest wall corresponding to the outlines of the heart, a heaving, forcible cardiac impulse, a diastolic thrill felt at the second left interspace one inch from the sternum, great increase of the cardiac dulness to the left of the sternum and upwards, and a diastolic, loud, rough murmur over the site of the thrill and transmitted to the left only, with a very loud pulmonary second sound.

Since November, 1900, the patient has attended the out-patient department of the hospital occasionally, and the conditions above described did not vary very much from time to time. The force of the heart beat varied considerably at different times, and occasionally there was marked cyanosis, but unaccompanied by any physical signs in the lungs. The patient died on September 2nd, and the last examination was made on August 22nd, eleven days before death, when the following notes were made:—

Child now shows no cyanosis. The heart is slower than usual, the beats more forcible. The prominence of the præcordium is about as before. The impulse is heaving, the fourth interspace rising and the

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\* Read before the Montreal Medico-Chirurgical Society, Oct. 4, 1901.

third and fifth falling with each systole. There is a well-marked diastolic shock with a fine diastolic thrill felt over the first and second left interspaces and extending out to the left shoulder. Relative dulness reaches to the second rib above, absolute dulness extends from the second rib above and at the level of the fourth rib it extends from a point half an inch to the right of the sternum five and three-quarter inches to the left. At the apex both sounds are clear, but a diastolic murmur can be heard which proves to have its origin at the base. Over the pulmonary cartilage (2nd left) there is an extremely loud pulmonary second sound, followed by a loud, rough, diastolic murmur which can be heard all over the upper part of the front of the thorax, but has its maximum intensity here. It is transmitted most loudly to the left along the second interspace. The lungs are clear.

On September 2nd, during my absence from the city, the child's mother came to the hospital for a death certificate, stating that at 11.30 that morning the child had complained of feeling hungry and had eaten a plate of soup and some bread. At 3 p.m. she became very short of breath and much cyanosed, but did not lose consciousness. Attempts at relieving the condition were ineffectual, and she died at 3.30 p.m. To Dr. Walter Fiske, who was taking the clinic in my absence, I am indebted for the above notes of her death, and also for obtaining an autopsy on this very interesting case.

Dr. John McCrae, Resident Pathologist of the Montreal General Hospital, very kindly made a partial autopsy on the patient with the following report :—

"A partial autopsy was performed on V.H., female, aged 14 years. Precordial region bulging: on section, pericardium contained the usual small amount of clear fluid and presented no adhesions, nor other abnormalities. Heart large, weight 300 grammes; all valves appeared normal and post-mortem measurements indicate no changes of importance. Auricles are slightly dilated, right ventricle greatly dilated and hypertrophied, left ventricle less so, the whole heart presenting a reversal of the usual state. On casual observation the left ventricle would be called the right. The right ventricle shows intense mural sclerotic endocarditis, and many of the columnæ carneæ are almost completely fibrosed on microscopical examination. Coronaries small but healthy looking. The condition is evidently an extreme grade of sclerotic endocarditis which has failed to affect any valves."

I think it not unreasonable to conclude in spite of the apparent competency of the pulmonary valves post-mortem, that there was relative incompetence during life without any actual deformity of the valves.

The extreme hypertrophy and dilatation of the right ventricle with the diastolic murmur, the thrill, and the accentuated second sound are thereby adequately explained. The primary cause of the condition is, however, not at all evident, as there was no pulmonary lesion or congenital narrowing of the pulmonary vessels to account for any hypertrophy of the right side of the heart. The fact, too, that the increase in dulness was almost entirely to the left and above is not accounted for by the post-mortem findings. The sclerosis was not found to include the pulmonary artery and aorta in so far as they were examined.

### THE DIAGNOSTIC VALUE OF HÆMOGLOBIN IN SYPHILIS (JUSTUS).\*

BY

ANDREW MACPHAIL, M.D.

Professor of Pathology, University of Bishop's College.

The test for the presence of syphilis, which goes by the name of Justus, may be summed up as follows:—"Syphilis untreated produces a diminution in the hæmoglobin varying in extent according to severity of the disease. As the syphilis undergoes spontaneous involution the loss of hæmoglobin is gradually made up. A like diminution of hæmoglobin occurs after the administration of mercury, varying according to the amount of the drug employed. The hæmoglobin is restored sooner or later, and it may sink again after the repetition of the mercury. If treatment is continued it finally reaches a higher level than before the mercurial treatment was begun. When the hæmoglobin no longer diminishes, after repetition of the drug, the syphilitic manifestations remit. The diminution is a specific phenomenon, not being observed in the blood of healthy persons nor in other diseases. This reaction is observed in early secondary and all subsequent stages, disappearing when the signs of syphilis remit and reappearing during every relapse."

Assuming these statements to be correct, it appeared that here was a valuable method for setting at rest the doubts which often arise in the diagnosis of conditions supposed to be of syphilitic origin. Many men have a haunting fear that in early life they may have contracted the disease, and even surgeons are often puzzled to explain lesions of the liver, and alienists, aberrations in the nervous mechanism. It seemed to me then that this test, assuming again, I say, the correctness of the above statement, very closely touched upon the etiology of general paresis. We are convinced that syphilis is the

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\* Read before the Montreal Medico-Chirurgical Society, November 1, 1901.



etiological factor of prime importance in paresis. All authorities agree that it concerns from 70 to 90 per cent. of all cases, and many hold the view that the causal relation between them is absolute. Not that nervous conditions like paresis and locomotor ataxia have ever been regarded as other than post-syphilitic, yet Justus' insistence upon the efficacy of the test "in all subsequent stages of the disease" brings these conditions within his claim.

The original communication was made to the Third International Congress of Dermatology held in London, and is contained in the *British Journal of Dermatology* for February and March, 1897. The author is Dr. J. Justus, first assistant in the University Dermatological Clinic, St. Stephen's Hospital, Buda-Pest, and the investigation covered five years in Professor Schwimmer's hospital practice, during which 300 patients were examined.

An examination of the original reveals the following affirmations:—

(1) Syphilis, if untreated, has the power of producing a diminution of the hæmoglobin according to the severity of the attack.

(2) If a patient, the subject of syphilis, absorbs a fairly large quantity of mercury in one dose, the hæmoglobin will sink rapidly and considerably.

(3) This decrease will be restored sooner or later if treatment by mercury is continued; the hæmoglobin will ultimately reach a much higher level than that observed before the treatment.

(4) When the amount of hæmoglobin ceases to sink in repeating the drug the syphilitic manifestations will be observed to remit.

(5) This rapid sinking is a specific phenomenon not to be observed in healthy persons or in other diseases.

(6) The reaction may be observed as soon as the glands remote from the point of inoculation are affected, and in all subsequent stages of the disease. The reaction disappears whenever the signs of syphilis show remission, but will appear during every relapse of the malady.

These observations were made upon persons in the Hospital for the Insane at Verdun, and are here tabulated:—

| No. | Percentage before mercury. | Percentage after mercury. | Previous history.  | Present disease.               |
|-----|----------------------------|---------------------------|--------------------|--------------------------------|
| 1   | 105.                       | 105.                      | Syphilis.          | General paresis.               |
| 2   | 100.                       | 109.                      | "                  | " "                            |
| 3   | 105.                       | 100.                      | "                  | " "                            |
| 4   | 95.                        | 95.                       | Unknown.           | " "                            |
| 5   | 85.                        | 85.                       | "                  | " "                            |
| 6   | 85.                        | 85.                       | "                  | " "                            |
| 7   | 110.                       | 110.                      | Syphilis probable. | " "                            |
| 8   | 90.                        | 95.                       | "                  | Sec. syphilis and melancholia. |
| 9   | 85.                        | 90.                       | No Syphilis.       | Dementia.                      |
| 10  | 90.                        | 80.                       | "                  | "                              |
| 11  | 95.                        | 100.                      | Alcoholism.        | Delusional insanity.           |
| 12  | 100.                       | 95.                       | Syphilis probable. | General paresis.               |

## SUPRARENAL EXTRACT IN CARDIAC CONDITIONS.

BY

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These few notes are presented, not with any intention of giving a detailed study of the action of suprarenal extract in cardiac conditions, but merely in exemplification of its therapeutic value when other measures have failed.

Case I.—Miss O., aged 82 years. About ten years ago she had an attack of what was then diagnosed as rheumatic gout, and was accompanied by severe swelling of the hands and feet and considerable temperature. Previous to this she had for years suffered from gastric disturbance, but was otherwise healthy. About six years ago I saw her for some asthmatic and bronchial troubles, and, on examination, found marked arterial sclerosis with mitral insufficiency in a well compensated heart. Subsequently, slight indispositions occurred at intervals until a year ago last winter, when she had another attack of bronchitis. Being absent from the city, another physician was called in, and, although making a good recovery from this, cardiac incompetency soon supervened, as manifested in œdematous extremities. Cardiac tonics were employed and improvement gradually took place, and after a brief holiday in the country she was completely convalescent. Again in the autumn the lower extremities began to swell, and, notwithstanding the administration of cardiac tonics with more or less rest in bed, the swelling would not disappear.

I resumed charge of the case in January last, and then found on examination an enormously dilated and hypertrophied heart, apex three inches external to the nipple line in the sixth intercostal space, heart action weak and irregular, with a series of murmurs of which it was impossible to determine the exact rhythm. The principal lesion was mitral insufficiency with myocarditis and marked arteriosclerosis. She had been taking a pill consisting of digitalis, one grain, squills, one grain, and nitrate of potash, two grains, an excellent combination from which she at first derived great benefit, but which later on lost its effects. Successively, then, she ran the gauntlet of cardiac tonics, digitalis, strophanthus, sparteine, caffeine, in various combinations, and occasionally in conjunction with the vasomotor dilators, the nitrates and iodides.

Though the swelling would partially disappear, the slightest attempt at sitting up or rising would bring on a recurrence of it. The different tonics and particularly digitalis along with the gastric venous

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\* Read before the Montreal Medico-Chirurgical Society, November 1, 1901.

congestion had so upset her stomach that vomiting ensued, and for some days I despaired of the life of my patient. Suprarenal extract in three grain doses, three times daily after meals, was then administered, and I was gratified to find that from the first day improvement began, and continued with marvellous rapidity, so that in a couple of weeks she was able to move about the house, the swelling of the feet along with the stomach trouble having entirely disappeared.

She was soon able to resume her walks; her heart action became regular and settled down to between sixty and seventy, with a well marked murmur of mitral insufficiency. The tension of her pulse is now good, and she says that she is now better and able to do more than she has for three years. The dose varied from nine to eighteen grains per diem.

Case II.—Mr. B., aged 76 years. The patient has always lived a very regular life, and, with the exception of rheumatic pains, a very healthy one. A couple of years ago he began to suffer from severe pains at night in the right hip joint radiating to the knee. Apart from the discomfort and nocturnal suffering, his health continued good until about four months ago, when I was asked to see him because of beginning swelling in his feet. The hip joint trouble was apparently a rheumatoid arthritic one, and was attended with severe pain and crepitation on movement. The question arose in diagnosis as to whether this might not be malignant, and the attendant swelling in the feet an obstructive one due to metastases, although the absence of cachexia and the duration argued against it.

The heart action was regular and fairly strong without discernible enlargement and abnormal sounds. The first sound seemed a little weak, but apparently insufficiently so to account for the increasing œdema, which persisted day and night. Digitalis, strophanthus, caffeine, sparteine and strychnine in various combinations were successively exhibited without any improvement. The swelling continued to increase until it reached the abdomen.

About this time a surgeon was called in consultation, and was inclined to think with me that there must be some obstructive condition in the course of the inferior vena cava, inasmuch as after the administration of the above cardiac tonics there had been no improvement, and there did not seem to be sufficient cause there to account for the symptoms. As I had just had such brilliant results with suprarenal in my other case, I began its use with him. Improvement set in almost immediately, and continued without interruption until the entire disappearance of the œdema, about six weeks afterwards,

proving that the trouble was due to cardiac weakness, and not to obstructive conditions.

When examined a few days ago, there was absolutely no œdema present, and, apart from his rheumatic arthritic joint, which troubles him at night, he seems to feel perfectly well. In this case also, suprarenal proved a *dernier resort*, and more than justified my fondest expectations. In both cases all other forms of recognized heart tonics had been employed without benefit, and it was only in despair that suprarenal was resorted to. What is its nature, and how does it act; are the questions naturally asked.

The active principle is derived from the medulla of the gland. It is neither a proteid, a carbohydrate, nor a fat. It is insoluble in pure alcohol, ether, or chloroform, but soluble in water, dilute alcohol and dilute acids. It diffuses through vegetable parchment, and is a reducing agent.

Physiologically, removal of both glands in an animal is followed by extreme muscular weakness, loss of tone of the vascular system, loss of appetite, general prostration, and death in from 12 to 72 hours. Intravenous injection of the watery extract, according to Shaeffer and several other investigators, is followed by powerful tonic action in the whole muscular system, but especially in the muscles of the heart and blood-vascular system. On the skeletal muscles contraction in response to a single excitation of nerve is as ready as normal, but its action is greatly prolonged, the effect produced being similar to that of veratria.

On the heart and blood-vessels with the vagi intact, the effect is to slow the auricle and stop it while the ventricle continues to contract with independent rhythm. With vagi cut the effect is to increase powerfully the strength and rapidity of auricular and ventricular contractions, with the result of increased flow of blood and rise of blood pressure.

There is, with small doses taken by the mouth and by intravenous injection, a very marked increase of blood pressure and vascular tone with intact vagi; and this becomes enormously increased with the vagi cut. The contraction of the arteries is further exemplified by placing an organ such as kidney or spleen in a plethysmograph and oncometer. The diminution of its volume under suprarenal demonstrates arteriole contraction. This arterial rise of blood pressure is due to the action of the drug on the musculature of the arteries, as the same results are obtained if the brain and spinal cord are destroyed in the animal experimented upon. If a drop of one per cent. solution be placed on the mesentery of a frog, the arterial contrac-



ture is so strong as to prevent the circulation of the blood through the vessels affected. This, Oliver has also stated in his Croonian lectures. "In man the effect of taking suprarenal extract by the mouth is to produce a general diminution in the calibre of the arteries as measured by the arteriometer." We have ample justification, therefore, in using the drug in the cases cited, and I believe that in these same cases similar results could not have been obtained in any other way.

I have also used it in two cases of Graves' disease, and the results have been good in toning up the vascular system and relieving some of the marked distress, particularly the attendant diarrhœa and tachycardia. The treatment, however, has not been sufficiently long in evidence to be able to draw definite conclusions.

To sum up, I believe that in suprarenal extract we have the best remedy known for toning up the vascular system in old myocarditic conditions attended by a lowered blood pressure, with the least possible disturbance to digestive and other functions.

## A CASE OF CONGENITAL ABSENCE OF THE UTERUS.\*

BY

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Assistant Demonstrator of Anatomy, McGill University, Montreal.

The pelvis presented to-night was procured in the dissecting room of the Medical Faculty of McGill University, and as absolutely nothing abnormal was noticed about the cadaver from which it was taken until the dissection of this part was begun, the absence of the uterus was discovered at a time when it was impossible to complete those observations which would be of interest in this case.

The student dissectors of this part have stated that the cadaver was that of a fairly developed female of between the ages of twenty and thirty years. They also affirm that no abnormality was noticed of the external genitalia or of any other part.

The pelvis as now presented to you has been prepared for the Anatomical Museum of McGill University, and it is by the kindness of the Professor of Anatomy that I am able to present it to you to-night. It demonstrates a condition which, although on record, is certainly rare, namely, what is apparently a congenital absence of the broad ligaments and of the uterus and its appendages, in a subject of otherwise normal development.

The common cavity of the uterus and vagina is formed in embryonic life by a fusion of the Mullerian ducts, which become, later,

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\* Read before the Montreal Medico-Chirurgical Society, October 4, 1901.

divided and modified into the uterus and vagina. Why this further development or division has not occurred in this case, seems difficult to explain, no rudiment of the missing structures having been found; while it will be noticed that the vagina appears to be normal with the exception of its termination as a blind *cul de sac*.

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### MISSED ABORTION.\*

BY

FRANK R. ENGLAND, M.D.

The specimen which I wish to bring before you speaks for itself. It is that of a three months ovum with its membranes still intact. The following is a brief history of the case:

Mrs. B., æt., 32 years, a healthy woman with a good personal and family history, the mother of three children, all of whom are living and well. Last menstrual period was November 20th. She consulted me on March the 2nd, complaining of backache and weakness. Digital examination per vaginam showed the cervix to be soft and the uterus somewhat enlarged. I told the patient that I thought she was pregnant, and prescribed a tonic. For the next five months I saw nothing of her, as she improved in health and strength, and was soon feeling particularly well. The amenorrhœa persisted, but no abdominal enlargement or other signs of pregnancy developed. On July 31st, more than eight months after the cessation of menstruation, she was seized with severe labour pains, accompanied with a bloody discharge. After four hours suffering a mass was expelled, which on examination was found to be an ovum of about three months with membranes unbroken. Very little blood was lost, and the patient made an uninterrupted recovery.

The points of greatest interest to me in the case are: First—that the uterus showed such toleration in retaining in its cavity a dead ovum for over five months without showing any symptoms denoting its presence; second—that the patient was so wretched during the first three months of gestation and improved in health so rapidly after the death of the embryo; third—that menstruation or other discharge did not appear till the ovum was expelled; fourth—that the case terminated so satisfactorily without interference.

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\* Exhibition of specimen with notes of the case presented at a meeting of the Montreal Medico-Chirurgical Society, Nov. 1st, 1901.

# RETROSPECT OF CURRENT LITERATURE.

## Medicine.

UNDER THE CHARGE OF JAMES STEWART.

### Pneumonia.

NORRIS, G. W. "Croupous Pneumonia." *Amer. Jour. of Med. Sciences*, June, 1901.

From this statistical paper, embracing the results of 500 cases of pneumonia admitted to the Pennsylvania Hospital from May, 1897, to March, 1901, the following points of special interest have been selected. Doubtful cases, and those that died within twelve hours from the admission were excluded from the report.

From 1898 to 1901 there was a remarkable increase in the number of cases of pneumonia admitted, the figures being 78, 169, 171 (to March, 1901), an increase out of proportion to the city's growth. The mortality was 125, or 25 per cent. Seven cases developed pulmonary tuberculosis. Males attacked, 382, with a mortality of 30 per cent. Females attacked, 118, with a mortality of 20 per cent. With regard to nationality, there were native Americans, white, 173; negroes, 59. Among those of foreign birth the Italians were the most numerous, 128. (A similar prevalence has been observed on a smaller scale among the Italians in Montreal.) Natives of England figure as the smallest item of the list, 14. The mortality was highest among the Germans, 53 per cent., and lowest among the Russians (chiefly Jews), 13 per cent. The high mortality of the Irish and Germans, who are for the most part hardy, as compared with that of the Russian Jews, is accounted for by the greater temperance of the latter in the use of alcoholic stimulants. Out of 34 individuals known to have been drunkards 23 died, or 67 per cent.

Prevalence in respect to age.—The maximum was between the ages of 20 and 30, 136 cases. The period of least fatality, between 10 and 20, 9.9 per cent., that of highest fatality (excepting in a single case over 80) between 60 and 70, 77 per cent. The mortality was highest amongst teamsters, 50 per cent., lowest among school children, 8.2 per cent.

Site of lesion.—Right lower lobe, 145 cases; mortality, 18 per cent. Left lower lobe, 115 cases; mortality, 13 per cent. The highest mor-

tality was when the disease affected both bases or both apices, respectively 48 and 50 per cent. Apical pneumonias were most frequent from one to ten years of age, and next from twenty to thirty.

Complications vastly increased the mortality percentages; uncomplicated cases, 355, with a mortality of 10 per cent; complicated cases, 145, with a mortality of 40 per cent. High temperature did not appear to affect the mortality unfavorably (except in one case of hyperpyrexia 108°F.), the highest figure, 40 per cent., occurring in a series of 30 cases whose maximum temperature was only 101°. A chart shows the increased prevalence of pneumonia in midwinter and in spring (January, April and, May).

An initial chill was noted in exactly 50 per cent. Termination by crisis occurred in 301 cases, especially frequent from the sixth to the tenth days of the illness (respectively, 34, 43, 58, 42, and 30 cases). Termination by lysis occurred in 74 cases. Four cases died after a crisis had taken place (a most unusual occurrence). The lowest subnormal temperature after a crisis was 95.2°F. A pseudo-crisis was observed in 54 cases, most frequently on the sixth and seventh days. The mortality in cases with a pseudo-crisis was only 9.2 per cent.

Prior attacks of pneumonia had occurred in 57; the mortality in these was 10 per cent. Albumin and casts were present in 245, albumin alone in 78. In the fatal cases albumin and casts 88, albumin alone 8.

The four most common complications were in order:—Jaundice, 18—11 deaths; delirium tremens, 17—12 deaths; typhoid fever, 15—7 deaths; pleural effusion, 12—1 death. Nephritis (acute) figures for only six cases, with three deaths, and empyema for six, with one death. There are no cases of abscess, and only four of pericarditis. Meningitis occurred four times with only one death (!). Endocarditis, 6 times, with 4 deaths (although of the malignant type).

Observation of the condition of the pupils in 64 cases showed that in this series of cases inequality of pupils was rare: in 33 apical pneumonias it occurred in only 2 cases, myosis in one case, mydriasis in the other, on the affected side. The phenomenon, when it occurs, is due to irritation of the inferior cervical ganglion, and to this are due also unilateral flushing and pallor.

Abnormalities of onset.—With acute delirium (1), epistaxis (1), pain in the ear (2), severe abdominal pain simulating appendicitis (2). Relapse occurred in 3 cases, in one, two days after a seventh day crisis.

The treatment was expectant and symptomatic. Venesection in sthenic cases to overcome cyanosis or marked dyspnoea proved of great benefit (no statistics of recoveries). Wet and dry cups, and the ice



bag were used to relieve pleuritic pain. Usually a mercurial laxative was given at the onset, and opium was used freely to allay erethism, pain, excessive cough, and to procure sleep. Ammonium carbonate was employed when bronchitis was marked, and the sputum very tenacious. Hyperpyrexia was occasionally combatted by sponging, more frequently left untreated. When stimulation was indicated, strychnine, whiskey, spirits of ammonia, nitroglycerine, camphorated oil, caffeine, or digitalis were ordered. Oxygen inhalations were apparently the means of tiding a number of cases over the critical period. Transfusion in connection with bleeding was occasionally resorted to where toxæmia was great.

The conclusion is that much may be done to alleviate suffering, and we have learned, at least, what not to do while awaiting future developments in the direction of prophylaxis and serum therapy.

#### **A New and Early Sign of Pneumonia in Children.**

WEILL. "Sur un nouveau signe précoce de la pneumonie infantile."  
*Gaz. des Hôpitaux*, No. 72, 1901.

In infantile pneumonia a sign occurs early in almost every case. It is a defect of expansion in the infraclavicular region of the affected side. Weill has looked for this sign in respiratory affections of all kinds, and has found it exclusively present in pneumonia. In pleurisy and pneumothorax expansion may be deficient on the affected side, but it involves the base or the whole side of the chest if the effusion be considerable. On the contrary, in pneumonia the seat of deficient expansion is limited to the infraclavicular region, and even when the pneumonic consolidation is at the base of the lung. This sign appears during the first days of the illness and often outlasts the febrile period of the illness. Its value lies in its early appearance, for it often happens that the physical signs are absent up to the fifth, sixth or seventh days in the form of the disease called by Weill, "centrifugal pneumonia," and, moreover, one knows that in pneumonia in children the onset may suggest a variety of diseases. The author has been enabled by this sign to recognize immediately the pneumonic nature of attacks that had been called appendicitis, meningitis, typhoid fever, and influenza.

To detect this sign all that is necessary is to place the patient in the dorsal position, and to wait until the deficient infraclavicular expansion will be observed. One must not mistake the upward lift of the clavicle for expansion. By placing the palmar surface of the fingers alternately on the two sides, one can perceive that on the healthy side the fingers are lifted by a wave, while on the affected side the hand is simply drawn upwards by the movement of the chest wall.

*H. A. Lafleur.*

## Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

### **Exclusively Rectal Feeding in Acute Appendicitis.**

OCHSNER (Chicago). "Ueber Verwendung ausschliesslicher Rektalernährung in akuten Appendicitisfällen." *Berliner klin. Wochenschrift*, 1900, No. 39.

Ochsner claims that the safety of a patient during the onset and development of appendical inflammation depends upon the formation of localising, limiting adhesions of the omentum and knuckles of small intestine around the appendix. He also states that this protective process is favoured by rest, and that food given by the mouth, even in small quantities, gives rise to the formation of more or less gas and stimulates peristalsis, which is incompatible with the repose of the bowels so much desired. He would therefore administer food by the bowel only until the acute symptoms have passed. He advocates operation early, during the first two days if thought necessary, emphasizing the importance of operating before the development of such conditions that make necessary the employment of a drainage tube.

### **Statistics of Mammary Carcinoma.**

GULEKE. "Beitrag zur Statistik des Mamma-Carcinoma." *Archiv. f. klinische Chirurgie*, Bd. 64, Hft. 3, 1901.

Guleke, a candidate in medicine, presents the statistics of 884 cases of cancer of the breast as a thesis, and very creditable indeed is his work. These cases presented themselves at von Bergmann's clinic in Berlin between Oct. 1, 1882 and Dec. 31, 1899. The thesis represents a lot of careful reading and arranging of cases in groups, and the comparison of results obtained on each point with those previously published by various writers. Some of the conclusions are interesting.

In discussing the etiology the author is very guarded and wisely abstains from the expression of any very decided views. He, however, finds that two-thirds of the cases occur between the ages of 41 and 60, and that about 90 per cent. of the patients have borne children. In only 7.3 per cent. of the 884 cases does trauma appear as a probable cause. Many physicians will think this altogether out of harmony with their own experience. On the other hand, definite statements as to heredity are made in 127 cases, in 21 of which, or 16.5 per cent., there was a history of cancer in some relative, more frequently the

father or mother. The two breasts are involved with almost equal frequency.

Guleke's findings as to the course of the disease are as follows:— Adhesion of the breast to the overlying skin occurs 12.15 months after the beginning of the disease; infiltration of the axillary glands in 11.8 months; adhesion to the pectoral fascia in 13.9, and ulceration in 16.45 months. Metastases occur most frequently in the liver, then, in order of frequency, in the other breast, the lungs, pleura, stomach, vertebræ and sternum. These latter results are about what one would expect.

The percentage of cured, that is, living and free from evidence of recurrence after three years, is 28.19 per cent. This is certainly low.

### **The Appendix Vermiformis.**

JAFFÉ, in Posen. "Zur Extirpation des Wurmfortsatzes im Freien Intervall." *Centralblatt f. Chirurgie*, No. 31, 1901.

SUDSKI. "Beiträge zur normalen und pathologischen Anatomie des Wurmfortsatzes." *Ibid.*, No. 39, 1901.

The Germans are becoming much interested in appendicitis; their journals make frequent mention of the subject, and they are studying it in their usual thorough and systematic manner. While it is true that they are doing good work in this field, it is also true that some writers have dealt with anatomical characteristics and pathological conditions familiar to all American and Canadian surgeons.

Some of the methods are very radical. Jaffé recommends, for instance, in cases of long-standing faecal fistulæ the removal of a portion of the cæcum and the performance of an entero-anastomosis. In one case in which he did this the result was a fatal peritonitis. He had two successful cases of resection of cæcum, and Dr. E. Martin of Köln reports another in the *Centralblatt für Chirurgie*, No. 39, 1901.

Sudski gives the results of the examination of 500 appendices in the Pathological Institute in Friedrichstein, Berlin, which did not show gross changes. He found the average length to be 8.6 cm. and the circumference 1.7 cm. Only in one-third of the cases was the valve over the mouth of the appendix present, and when found did not seem to prevent faeces from entering the lumen. Faeces were found in about half the cases although faecal concretions were only seen four times. These concretions are often found in cases of perforation of the appendix and appear to be a cause of the perforation.

In one-third of the cases the direction of the appendix was downwards and often reached the border of the true pelvis. In the other cases it lay horizontally or directed upwards. In 22.6 per cent. of the cases the lumen of the appendix was totally or partially obliterated. In

elderly people over 70 years of age the lumen of the appendix was more or less obliterated. This is regarded as a result of a process of involution and not of inflammation. The process generally begins at the apex and sometimes at the caecal end, when the lumen beyond may be dilated and filled with mucus. The epithelial lining atrophied, but the lymphatics persisted for a long time.

#### **Treatment of Hydrocele and Varicocele.**

LONGUET. "Transposition of the Testicle in the Treatment of Hydrocele and Varicocele." *Le Progrès Médical*, Sept. 21, 1901.

Longuet, in an illustrated article, advocates a procedure which he has carried out in a number of cases for the cure of hydrocele and varicocele. He emphasizes three steps in the operation:—

(1) Incision of the sac and the pressing forward through the incision of the testicle.

(2) The folding of the sac into a cord, and the insertion of retaining sutures.

(3) The placing of the testicle outside of the serous membrane and suturing of the skin.

He does not remove any portion of the tunica vaginalis, thereby lessening hæmorrhage. The method, he claims, is applicable to cases of hydrocele and hæmatocele, to varicocele, and to the replacement of ectopic testicles. The illustrations are indistinct and only imperfectly illustrate the points it is desired to make clear.

#### **Treatment of Renal Tension by Surgical Means.**

HARRISON. "Renal Tension and its Treatment by Surgical Means." *British Med. Jour.*, Oct. 19, 1901.

It would seem that the aggressive surgeon is about to invade another field hitherto occupied by the physicians exclusively. At the last meeting of the British Medical Association, Mr. Reginald Harrison opened the discussion on the surgical treatment of renal tension, and gave the clinical history of cases in which incision of the kidney capsule and subsequent drainage was carried out with apparent benefit. He compares the relief to the kidney tension after incision of the capsule to that obtained by the performance of iridectomy in glaucoma.

Harrison thinks incision of the kidney capsule indicated in cases of acute nephritis following scarlatina or exposure to cold, or resulting from traumatism, in which the disease, as indicated by the continued presence of fever, pain, albuminuria and hæmaturia beyond the period when convalescence might be reasonably supposed to be established. In other words, cases which are tending rather to chronicity rather than to cure.



He also recommends the treatment by incision in the malignant type of constitutional nephritis. Cases in which "the kidneys appear to be at once overwhelmed in the pathological changes that supervene, suppression of urine occurs, and death rapidly follows from uræmia, with coma and convulsions. After death under these circumstances it is usual to find the kidney intensely congested, the capsule tense and shiny and overfilled with blood."

However capable of gradual distension the capsule of the kidney may be, there is no doubt that it is very intolerant of any sudden increase of internal tension, and experience gained in operating on that organ teaches that in certain conditions of congestion the capsule is so tightly stretched and its substance exposed to such pressure, as quite to explain any interference with its function.

Marked disturbance of the heart and circulatory apparatus arising in the course of renal disorders is another indication for surgical interference.

Most marked improvement certainly followed operations in several of Mr. Harrison's cases. He leaves in the drainage tube, which is carried down to the line of incision, for several days, and sometimes for weeks.

#### **Resection of the Bowel in Strangulated Hernia.**

VIDAL. "Huit cas de résection étendue de l'intestin pour sphacèle herniaire". *Archives Provinciales de Chirurgie*, Septembre, 1901.

Vidal reports eight cases of resection of gangrenous bowel resulting from strangulated herniæ with only one death. In the fatal case, there was advanced renal insufficiency. The author considers that resection gives better chances of immediate recovery than does the formation of an artificial anus, to say nothing of the avoidance of the unpleasant sequelæ. His results would certainly seem to sustain his opinion. He finds that gangrene may appear in strangulated herniæ in from 16 hours to 4 days. Strong opposition is made against forcible attempts to reduce by taxis after ten hours of strangulation. It is admitted that this rude may lead to operation in some cases in which taxis would have proved successful, but it is claimed, on the other hand, that the returning into the abdomen of sac contents, which are septic, is avoided.

Vidal claims to have proved experimentally that there is in the mucus of the normal intestine a secretion which is antitoxic to stercoral poisons. He has extracted this antitoxin and injected it into some of his cases. He uses it in conjunction with saline solution, and believes that if injected in sufficient quantities it neutralises the action of the stercoral poisons in the kidneys and heart, and enables them to resume their functions.

*G. E. Armstrong.*

## Obstetrics.

UNDER THE CHARGE OF WILLIAM GARDNER.

### Puerperal Eclampsia.

GROVES, ERNEST W. HEY. "The Pathology and Treatment of Puerperal Eclampsia with Special Reference to the use of Saline Transfusion (with notes of two cases.) *Trans. of Obstet. Society of London Part II., Vol. XLIII.*

The author reports the following interesting cases:—

Case I.—Primipara, aged 23, easy labour in advance of medical attendance, immediately followed by convulsions and coma which increased in severity for twelve hours in spite of morphine and pilocarpine. Injection of 100 ounces of normal saline solution at a temperature of 100°F. introduced by means of canula in the median basilic vein. Transfusion occupied forty minutes. Marked improvement immediately followed; fits ceased in three hours; coma passed off, and diuresis occurred in thirteen hours. Subsequent progress uninterrupted.

Case II.—Secundipara, aged 21; labor at full term ushered in by convulsions coma and anuria. Twenty-six fits of extreme violence between 2 a.m. and 4 p.m. Transfusion of 70 ounces of normal saline solution into median basilic vein. Labour concluded an hour and a half later. Frequency and violence of fits lessened after transfusion. Steady improvement; diuresis established within forty-eight hours.

Forty-five cases, chiefly those of Porock, Bernheim and Jardine are tabulated, showing a mortality of 12.7 per cent. with transfusion treatment. Evidence of the toxic nature of puerperal convulsions is then considered. He believes that the most constant and characteristic lesions associated with eclampsia are those found in the liver, which are *par excellence* those of acute toxæmia. The great prominence of tissue necrosis, associated with capillary thrombosis and hæmorrhagic infarcts in the brain and kidneys as well as the liver, also indicates the toxic nature of the disease. Closely related to this tissue necrosis is the greatly increased coagulability of the blood, which has been observed both ante and post mortem. He thus considers that eclampsia is due to the toxic condition of the blood, which first increases its coagulability, and then causes it to form multiple thromboses in the various organs. While the nature of the toxine is uncertain it is pro-

bably related to the bases, and is derived from the placenta, the fœtus, and from the alimentary canal. The presence of the toxins in the blood produces the pre-eclamptic symptoms; the actual convulsions and coma result when these toxins cause the coagulation of the blood and the multiple capillary thrombi.

He suggests that the therapeutic action of the saline solution is probably due to its hindering the formation of thrombi and dissolving those already formed. The fact that diuresis does not take place until some time after the convulsions have ceased, indicates that the saline solution does not act primarily as a diuretic. He notes as bearing out this theory that cases have been recorded in which gelatine injections have caused symptoms of anuria and uræmia with multiple thrombosis.

### **Fibroid Tumours Complicating Pregnancy.**

DONALD ARCHIBALD. "Fibroid Tumours Complicating Pregnancy and Labour. *Trans. Obstet. Soc. of London, Part III., Vol. XLIII.*

The writer discusses the risks which are involved by the existence of fibroid tumours of the uterus during pregnancy and labour, and comes to the conclusion that in the majority of instances neither pregnancy nor labour is seriously influenced by these tumours, but that in a small proportion of cases the danger to mother and child is greatly increased.

The risks during pregnancy he sums up as follows:—(1) Rapid increase in the size of the tumour, causing severe pain or distress; (2) incarceration of the tumour in the pelvis; (3) serious pressure on the bladder; (4) degeneration of the tumour through diminished nutrition; (5) excessive rotation of the pregnant uterus; (6) abortion or premature labour as the result of pressure or of submucous development of the fibroid.

Abortion or labour may be complicated by (1) obstruction of the maternal passages, (2) malpresentations, (3) retention of the placenta or membranes, (4) extrusion of the tumour during labour.

The presence of a uterine fibroid during the puerperium renders septic infection more likely.

With regard to the treatment, the writer is of the opinion that it is better to leave matters alone until term, when the treatment in each case must be settled by a careful examination under an anæsthetic if necessary. If delivery by the natural passages involves the employment of much force, Cæsarean section is to be preferred.

The treatment in the earlier months when interference is necessary involves the choice of one of three methods:—(1) induction of abortion;

(2) hysterectomy, or (3) myomectomy. The author considers that induction of abortion should be abandoned on account of the risks involved. In these cases the growth is generally so situated as to block the pelvis, so that the cervix is difficult to reach, and the uterine cavity is twisted and deflected. There is thus great difficulty in thoroughly emptying the uterine cavity; hence the danger of severe hæmorrhage at the time of operation and the risk of subsequent septic infection.

The writer advocates a preliminary myomectomy whenever it is possible, should interference in the earlier months of pregnancy be required, as by this method the life of the child may be saved. In all classes of subperitoneal pedunculated fibroids the tumour ought to be removed during pregnancy. When the tumour is more sessile and operation is required during the earlier months, it is best to enucleate the tumour and stitch up the gap in the uterine wall. If, however, the raw surface is too extensive as if it is close to the uterine cavity or if the hæmorrhage is difficult to control, the operation ought to be terminated by hysterectomy.

Notes of three cases of abdominal hysterectomy for rapidly growing fibroids in the early months of pregnancy are then given. One case of myomectomy is also reported where the tumour occupied the anterior wall and fundus of the uterus. The operation was performed in the thirteenth week of pregnancy and no signs of abortion followed, the patient going to term successfully.

#### **Value of Hegar's Sign.**

LE CONTE, ROBERT G. "The value of Hegar's Sign in Differentiating Pregnancy from Uterine Myoma." *Amer. Jour. of Obstetrics*, July, 1901.

After pointing out that softening of the vaginal portion of the cervix cannot be relied upon for differential diagnosis between early pregnancy and myoma, especially when the latter is rapidly growing, the writer gives a review of the literature on this subject. The conclusion reached thus is that authorities differ on the value of Hegar's sign as a diagnostic symptom.

He states that he has been unable to find reported a case of myoma of the uterus resembling in appearance, size, and consistency a condition of pregnancy. In each case compressibility of the lower uterine segment (Hegar's sign) was absent, so the operation was proceeded with, and in none was pregnancy found to exist. He, therefore, suggests that the presence or absence of Hegar's sign is a valuable factor in the differential diagnosis.



**Prophylactic Value of the Tub Bath before Labour.**

STROGANOFF, W. "Can Tub Baths be Considered the best Mode of Cleansing the Bodies of Parturients"? *Cent. f. Gyn.*, No. 6, page 145, 1901.

Stroganoff shows that the dirt and bacteria from previous bathers in the tub, from the woman's own body, and from excrement removed from the anal region, are transferred to the nipple in diluted form and may enter the vagina. He has proved the entrance of the bath water into the vagina of the bather by causing a woman to bathe in a solution of potassium iodide, and then removing and examining the contents of the vaginal fornix. He considers that staphylococci and streptococci may be carried in the same way if the person has ulcers on any part of the body.

He advises washing with soap while the woman stands under a stream of running water. Since he has adopted this method in his maternity service the morbidity has been reduced  $7\frac{1}{2}$  per cent.

STICHER. "Preparatory Bath of Parturients a Source of Infection." *Central f. Gyn.* No. 9, page 217, 1901.

The writer has demonstrated that bacteria may gain entrance to the vagina during the preparatory bath. He placed in the bath water a quantity of bacilli which are ordinarily not met with in the vaginal secretion, the bacillus prodigiosus. He succeeded in demonstrating in primiparæ as well as in multiparæ, the presence of the bacillus in question in the vaginal secretion after the bath.

**Treatment of Laceration of the Puerperal Uterus.**

CRISTEANU, CORNELIUS. "The Treatment of Complete Uterine Lacerations by Total Abdominal Hysterectomy. Report of three cases." *Annales de Gyn. et d'Obstet.*, April, 1901.

The writer reports three cases of complete laceration in which he performed total hysterectomy successfully by the abdominal route.

He totally disagrees with the conclusions reached by Herbert Spencer in a recent paper read before the Obstetrical Society of London, which were:—(1) that opening of the abdomen was rarely indicated; (2) that abdominal hysterectomy is rarely indicated, the vaginal route being preferable when the tissues are lax and lacerated; (3) in partial lacerations tamponade with extraction of all clots by douching.

Cristeanu concludes that in ruptures penetrating the uterus there is an absolute indication for laparotomy, and the extraction of the fetus by the abdominal route when it has escaped into the peritoneal cavity, after which the patient should be placed in the Trendelenburg position,

and total hysterectomy performed. He prefers to close the abdominal wound in two stages and to drain through the vagina. Saline injections should be given before, during, and after the operation.

BRINDEAU, M.A. "Two cases of Subperitoneal Laceration of the Lower Uterine Segment. *Bull. de la Soc. d'Obstet. de Paris*, No. 3, 1901.

The writer reports two cases of partial rupture of the lower uterine segment subsequent to the operation of version on account of transverse presentation. The condition in each case was suspected from the symptoms, severe hæmorrhage, and collapse, and diagnosed by internal examination. The rent in each case was packed with sterilized gauze which was replaced in twenty-four hours.

Septic symptoms developed in both cases, but by securing good drainage and by regular douching the patients recovered and left the hospital within thirty days.

*D. J. Evans.*

## Reviews and Notices of Books.

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SAUNDERS' MEDICAL HAND ATLASES. ATLAS AND EPITOME OF LABOUR AND OPERATIVE OBSTETRICS. By DR. O. SHAEFFER, of Heidelberg. From the fifth revised German Edition. Edited by J. CLIFTON EDGAR, M.D., Professor of Obstetrics and Clinical Midwifery, Cornell University Medical School. With 14 lithographic plates in colours and 139 other illustrations. Philadelphia and London, W. B. Saunders & Co. 1901. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$2.00.

That this work is extremely popular in Germany is evidenced by the fact that this book is translated from the fifth German edition. The editor of the English translation has retained the classification of presentations, positions, and obstetric operations as in the original.

The book is a consideration of the act of parturition from the standpoint of a practical obstetrician. The subject is divided into two sections, the first being a consideration of the various presentations and conditions of the foetus, while the second deals with obstetric operations.

The work is essentially an atlas, but the text constitutes a condensed outline of the subject. The photos and figures are wonderfully good in most instances and very true to nature. As exceptions to this rule may be instanced plates 15 to 18, which give a quite erroneous idea of the matter of separation of the placenta. Plate 12 shows how the placenta should *not* be separated, as the operator's hand is pictured as within the sac of the membranes.

The work is German in its attention to detail and in its thoroughness. It should prove of great value to the student as an aid to his study of text books on the subject.

SAUNDERS' MEDICAL HAND-ATLASES—ATLAS AND EPITOME OF OBSTETRICAL DIAGNOSIS AND TREATMENT. By DR. O. SHAEFFER, of Heidelberg. From the second revised German Edition. Edited by J. CLIFTON EDGAR, M.D., Professor of Obstetrics and Clinical Midwifery, Cornell University Medical School. With 122 coloured figures on 56 plates, and 38 other illustrations. Philadelphia and London, W. B. Saunders & Co. 1901. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$3.00.

This book is in fact a small text-book of obstetrics with a profusion

of illustrations and diagrams of exceptional value, and is to be recommended as a work of reference. The author states in his preface that he has been guided chiefly by the demands of the practical and clinical side of obstetrics in the preparation of this work. All scientific explanations and data are printed in different type from the ordinary text.

Part I. deals with the physiology and dietetics of pregnancy, labour, and the puerperium. Part II. is a consideration of the pathology and treatment of pregnancy, labour and the puerperium. The plates and figures, as in the case of the previous book by the same author, leave nothing to be desired.

One notes that in the expectant treatment of abortion the author advises vaginal bougies of opium and the application of cold compresses to the abdomen when hæmorrhage is profuse. In the treatment of putrid abortion cases he recommends vaporization of the uterus, but qualifies his remarks with the statement that "this treatment should only be performed by a practised hand."

The chapter on "Deformed Pelves" is excellent, perhaps the best in the book.

Those two works taken together form an original and highly interesting consideration of the subject of obstetrics and are to be highly commended as valuable contributions to the literature of the subject.

The books are handsomely bound in green cloth and are of convenient size, the publishers having done their part to make the works highly acceptable.

*D. J. E.*

A TREATISE ON MENTAL DISEASES. Based upon the Lecture Course at the Johns Hopkins University, 1899, and designed for the use of Practitioners and Students of Medicine. By HENRY J. BERKLEY, M.D., Clinical Professor of Psychiatry. New York, D. Appleton & Co. 1900.

This work is one covering, in a very full and complete manner, the leading features of the different varieties of mental disease. It is one especially adapted to the needs of the practitioner. The first part, extending over 40 pages, is devoted to a very lucid description of the anatomy of the cerebrum, a subject that the author, from his well-known researches, is well qualified to deal with. The second part of the volume deals with the general pathology of the different types of insanity. The third part, after a general introduction on the causes, symptoms and general therapeutics, takes up the special forms of insanity. A special chapter is reserved for the psychoses of childhood.

The work is one thoroughly up to the most recent investigations, and



presents the whole subject of insanity in a way that no other work in the English language does.

The illustrations are very numerous and of a high-class order. The publishers have done their work in their usual finished style.

ATLAS OF THE NERVOUS SYSTEM, Including an Epitome of the Anatomy, Pathology and Treatment. By DR. C. JAKOB, of Erlangen. Translation from the second German edition. Edited by E. D. FISHER, M.D., New York. With 83 plates. Philadelphia and London, W. B. Saunders & Co. 1901. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$3.50.

The beautiful plates in this volume cover practically all the more important parts of the central and peripheral nervous system. The text, although short, is sufficiently clear and definite to enable the reader to obtain a clear insight into the normal and pathological histology of the nervous system. The work, considering the numerous coloured illustrations, is wonderfully cheap, and will well repay the outlay.

NERVOUS AND MENTAL DISEASES. By ARCHIBALD CHURCH, M.D., Professor of Nervous and Mental Diseases and Head of Neurological Department, Northwestern University Medical School; and FREDERICK PETERSON, M.D., Chief of Clinic, Department of Nervous and Mental Diseases, and Clinical Lecturer on Psychiatry, College of Physicians and Surgeons, New York. Third Edition, revised and enlarged. Handsome octavo volume of 870 pages, with 322 illustrations. Philadelphia and London: W. B. Saunders & Co. 1901. Cloth, \$5.00 net. Toronto: J. A. Carveth & Co.

This work has met with a most favorable reception from the profession at large, two editions having been exhausted in as many years. It fills a distinct want in medical literature, and is unique in that it furnishes in one volume practical treatises on the two great subjects of Neurology and Psychiatry.

In this edition the book has been thoroughly revised in every part, both by additions to the subject matter and by rearrangement wherever necessary, to make it more acceptable to the practitioner and the student. Several sections have been entirely rewritten, and there have been added a number of new illustrations, an increased amount of tabular matter, and a series of diagrams that have proved of assistance in the solution of diagnostic problems.

We reviewed at length the first edition which appeared only two

years ago, very favourably. The marked success of the work is a sufficient guarantee of its usefulness.

**MEDICAL ELECTRICITY: A Practical Handbook for Students and Practitioners.** By H. LEWIS JONES, M.A., M.D., Medical Officer in charge of the Electrical Department in St. Bartholomew's Hospital. With illustrations. London, H. K. Lewis, 136 Gower Street.

This work is the third edition of "Medical Electricity," by Drs. Steavenson and Jones. The subject is brought up to date, including a useful chapter on the utilization of current from the mains for medical and surgical purposes. The X-rays are referred to in a chapter, which gives one the essentials for the understanding of this subject. Static electricity is treated more fully than in previous editions. Altogether, the third edition is an improvement on a useful work. It is well illustrated and printed.

**ATLAS AND EPITOME OF SPECIAL PATHOLOGIC HISTOLOGY.** By Doctent DR. HERMANN DURCK, of the Pathologic Institute of Munich. Edited by LUDVIG HEKTOEN, M.D., Professor of Pathology in Rush Medical College, Chicago. Vol. II. Philadelphia and London, W. B. Saunders & Co., 1901. Cloth, \$3.00 net. Canadian Agents, J. A. Carveth & Co., Toronto, Ont.

We have already expressed our appreciation of the first volume of this work, published now some months ago, and this second part is fully up to the first in every respect, both in the precise, clear descriptions, and in the illustrations, which are the main features of this as of other volumes of this series of hand atlases. These illustrations are, with a few exceptions, worthy of the highest praise and render the work of peculiar value for reference. As in the previous volume, Professor Hektoen has added some most valuable notes which are incorporated in the text.

**A LABORATORY COURSE IN BACTERIOLOGY.** For the use of Medical, Agricultural, and Industrial Students. By FREDERIC P. GORHAM, A.M., Professor of Biology, Brown University; Bacteriologist to the Health Department, Providence, R.I. Philadelphia and London, W. B. Saunders & Co., 1901. Cloth, \$1.25 net. Canadian Agents, J. A. Carveth & Co., Toronto, Ont.

Mr. Gorham, Bacteriologist to the Health Department of Rhode Island, has here published a most valuable little book upon bacteriological methods, valuable especially in that it places clearly and precisely before the student the methods which nowadays are recognized as being the most exact. He has for teaching purposes incorporated very

largely the Recommendations of the Committee of Bacteriologists of the American Public Health Association, with such modifications as have been proposed by Hills, Chester and others, to insure yet more perfect preparation of various standard media, and appears further, from a rapid review of the work, to have recommended those methods of staining and preparation of various pathogenic micro-organisms which are now recognized as being most satisfactory. We note especially that he follows Migula in his classification of bacteria, and Chester in his method of classification of bacteria by groups. Altogether, the work is well produced, and well up-to-date. We doubt, however, whether he is right in describing it as a laboratory course in bacteriology, for the arrangement is not such as permits easily the regular progressive study of bacteriology; rather it is a handbook for the laboratory worker in bacteriology, and as such is to be recommended.

PRINCIPLES OF SURGERY. By N. SENN, M.D., PH.D., LL.D., Professor of Surgery Rush Medical College, Chicago, etc. Third Edition, thoroughly revised. Philadelphia, F. A. Davis & Co., Publishers, 1901.

In this, as in all of Dr. Senn's writings, there is much that is suggestive, much that is valuable, much that is the result of personal observation, and at the same time, much that is irritating on account of obvious hurry and failure to thoroughly digest the abundant literature that has been gathered together by the author bearing upon this subject. The work, treating fully of such pathological subjects as Regeneration, Inflammation, and various infective diseases which especially interest the surgeon, has nothing upon the subject of tumours, this being treated by the author in a separate volume. With Nancrede, Dr. Senn still holds that inflammation is essentially the result of bacterial disturbance, and his views upon inflammation are based throughout upon this supposition. While the work is admittedly valuable we cannot but call attention to these defects which prevent it from taking position as a classic.

THE HYGIENE OF TRANSMISSIBLE DISEASES: Their Causation, Modes of Dessemination and Methods of Prevention. By A. C. ABBOTT, M.D., Professor of Hygiene and Bacteriology, University of Pennsylvania. Third Edition, Revised and Enlarged. Philadelphia and London, W. B. Saunders & Co., 1901. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$2.50.

Only a short time ago we noticed in these pages the first edition of this book, yet in the interval since its appearance considerable advance has been made in matter of the modes of dessemination of several of

the infectious diseases, and many minor points have had to be altered to conform with the result of recent investigations. The general plan of the book is the same, and its size has not been increased, the whole book, however, has been thoroughly revised to include the latest knowledge. The author is not yet convinced that the mosquito has been definitely proved to be the medium through which yellow fever is communicated from man to man. In referring to the matter he writes in such a manner that one would conclude that he does not consider the agency of the mosquito yet as proven.

A MANUAL OF BACTERIOLOGY. By HERBERT U. WILLIAMS, M.D., Professor of Pathology and Bacteriology, Medical Department, University of Buffalo. Second Edition, 1901, pp. 290. P. Blakiston's Sons & Co., Philadelphia.

Although but a short time has elapsed since the publication of the first edition of Dr. Williams' book, there has evidently been a considerable demand for the work which one would well imagine would be much appreciated by the students of bacteriology. As the author rightly suggests in the Preface to his work, "Many medical schools whether wisely or not, require their students to absorb an amount of knowledge that taxes the brain to the utmost." The object of most schools is, and indeed should be to enable the student to graduate with an all-round knowledge of the subjects mentioned in their curriculum. With nearly all the larger text-books on bacteriology, it is, to say the least, discouraging to the student to attempt to do more than follow out the lectures received from the Professor, and in this way it is impossible to use text-books as more than the merest books of reference. Dr. Williams has overcome this inconvenience by publishing a book, which, even though in its second edition, has not been so greatly enlarged as to be cumbersome. It is amply supplied with illustrations, all of which are on the whole executed well, and useful as demonstrations. We wonder, however, if the doctor really himself uses the model of the Schanze Microtome figured on p. 39. If so, we would like to commend to him the newer forms now some years in use on the plan of Dr. Minot. There are on the whole very few errors in the book, though we do not agree with the author that tuberculin is practically only employed for the diagnosis of tuberculosis in cattle; we hope that its value in the diagnosis of tuberculosis in the human subject is duly recognized. The book is one which should commend itself to every student, and to every lecturer in bacteriology.

E. W. A.



A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By DR. HERMAN EICHHORST, Professor of Special Pathology and Therapeutics and Director of the Medical Clinic in the University of Zurich. Translated and Edited by AUGUSTUS A. ESHNER, M.D., Professor of Clinical Medicine in the Philadelphia Polyclinic. In 2 vols. Philadelphia and London, W. B. Saunders & Co., 1901. Canadian Agents, J. A. Carveth & Co., Toronto. Price, \$6.00 per set.

Professor Eichhorst has recently published what is practically a condensed edition of his well known *Handbook on Special Pathology and Therapeutics*, and it is this smaller work which Dr. Eshner has translated into English. That it will meet with a ready sale in this country can be confidently predicted, as the original, although not long before the profession, is now recognized as one of the best German text-books on internal medicine, and is too well known to require any detailed notice here.

The publishers have been most happy in their selection of a translator, Dr. Eshner, who has accomplished a difficult task in a most satisfactory manner. In the make-up of the book, too, special attention has been given to bringing out the most important facts by the judicious use of italics and black leaded type, a feature which will appeal most favourably to the student. The publishers are to be congratulated in having placed within the reach of the English-speaking profession one of the most valuable of modern works on the practice of medicine.

**PATHOLOGICAL TECHNIQUE.** A Practical Manual for Workers in Pathological Histology, including Directions for the Performance of Autopsies and for Clinical Diagnosis by Laboratory Methods. By FRANK P. MALLORY, A.M., M.D., Associate Professor of Pathology, Harvard University Medical School; and JAMES H. WRIGHT, A.M., M.D., Instructor in Pathology, Harvard University Medical School. Second Edition. Revised and Enlarged. Philadelphia and London: W. B. Saunders & Co., 1901. Cloth, \$3.00 net. Canadian Agents, J. A. Carveth & Co., Toronto, Ont.

"Mallory and Wright" has proved itself an invaluable handbook for the pathological laboratory and needs no recommendation. We can only express our pleasure that this new edition is an advance upon the first, in that it incorporates materially the advances which have been made in methods during the last year. We are glad, for example, to find here, Wright's own method for the cultivation of anaërobic bacteria and the descriptions of the new staining methods by Mallory, for connective tissue by Weigert, for bone by Schmorl, together with Wright's

observations upon the parasite of Madura foot. We doubt whether Wright is correct, however, in suggesting that the pale variety of Madura foot is identical with actinomycosis. Certainly the organism is one of the ray fungi, but the identity of the ray fungi with human actinomycosis has not yet been determined. We cannot close with this criticism without expressing our appreciation for the admirable reproduction of various bacteria, reproductions of new photomicrographs made by Dr. Wright and Mr. Ellis Brown in the Pathological Laboratory of the Massachusetts General Hospital; these magnified, many of them, 2,000 times, give singularly true impressions of the appearance of these microbes, and are an advance upon the illustrations so far afforded in textbooks.

A SYSTEM OF PHYSIOLOGIC THERAPEUTICS. Edited by SOLOMON SOLIS COHEN, M.D., Professor of Medicine and Therapeutics in the Philadelphia Polyclinic, etc. Volume I., Electrotherapy. By GEORGE W. JACOBY, M.D., Consulting Neurologist to the German Hospital, New York City, etc. In two books, Book I. Philadelphia, P. Blakiston's Son & Co., 1901. Canadian Agents, Chandler & Massey, Toronto and Montreal. Price, \$2.00 per volume.

An introductory chapter to the whole system is written by the editor, Dr. Solis Cohen, entitled "Therapeutics Without Drugs," and in it the plan of the entire series of eleven volumes is set forth. It was judged wiser to have the books of a convenient size for handling, and thus electrotherapy forms the subject of the first two.

The first book deals with electrophysics and the apparatus required for the therapeutic and diagnostic use of electricity, while the practical application of the subject is treated in the second volume. The language used is simple, and within the understanding of anyone having the least rudimentary knowledge of physics, and the debatable points are in a great measure omitted, so that the reader is not needlessly confused. At the same time, the author endeavours to give the student a good general idea of the laws governing electricity by use of the old familiar comparison of the units of electricity with those of hydrostatics and hydraulics. Illustrations are freely used to show the experiments from which the science has been studied, and the apparatus used in medical electricity is depicted and explained. While the book contains a great deal that the physician making use of electricity as a therapeutic agent in his daily practice can do without, there is no question but that an understanding of its contents will enable him to use it more intelligently and take better care of his apparatus. Then, too, it will enable him to choose between the good and worthless in-

struments, with both of which the market is at the present time flooded.

Book II., Diagnosis; Therapeutics.

This volume, in addition to a very full description of general electrotherapeutics, contains several chapters dealing with the use of electricity in a number of the special departments of medicine. We note the following special articles:—On the use of electricity in diseases of the eye, by Dr. Jackson, of Denver; in diseases of the ear, nose and throat, by Dr. Scheppegegrell, of New Orleans; in general surgery, by Dr. J. Chalmers DaCosta, of Philadelphia; in gynaecology, by Dr. F. H. Martin, of Chicago; in diseases of the skin, by Dr. A. H. Ohmann-Dumesnil, of St. Louis. The work is thoroughly illustrated and well printed.

ON PARALYSIS AGITANS. With an account of the Clinical Features of Other Forms of Tremor. By R. J. WILLIAMSON, M.D., Assistant Lecturer on Medicine, Owen's College, Manchester. Sherratt & Hughes, 1901.

This is a work of about 70 pages, containing a very complete description of the symptoms of paralysis agitans. The work is noteworthy for a very good account of the most trustworthy palliative measures for one of the most distressing of all diseases.

Dr. Williamson places much reliance on hyoscine. It appears to give in many cases a degree of relief. We have, however, found veratrina more effective and much less likely to give rise to untoward symptoms.

The clinical distinction between paralysis agitans and other forms of tremor is well described.

A TEXT-BOOK OF THE MEDICAL TREATMENT OF DISEASES AND SYMPTOMS. By NESTOR TIRARD, M.D., London, F.R.C.P., Professor of the Principles and Practice of Medicine, King's College, London, etc. Adapted to the United States Pharmacopœia, by E. QUIN THORNTON, M.D. Lea Brothers & Co., Philadelphia and New York, 1900.

We have in this one volume of convenient size a thoroughly practical work on the medical treatment of disease. Most of the text-books of medicine of the present time are deficient in their consideration of this most important part of the physician's art, and the works on practical therapeutics are either extremely voluminous or add that part of the subject to materia medica and pharmacology, in such a way that one has to pick out what one wants. Tirard's book deals solely with treatment, except occasionally, where reference must ne-

cessarily be made to etiology and pathology in order to explain the reason of the methods described.

Besides taking up *seriatum* the various diseases in an anatomical order the author has devoted space to many of the more prominent symptoms, such as constipation, hæmoptysis, vomiting, etc., which often require to be dealt with apart from the treatment of the causative disease. Altogether, the book cannot fail to be of great use to every practitioner having a large general practice, and who does not wish to rely entirely upon the routine methods of treatment.

**THE PRACTICE OF MEDICINE :** A Text-Book for Practitioners and Students, with Special Reference to Diagnosis and Treatment. By JAMES TYSON, M.D. Second edition. P. Blakiston, Son & Co., Philadelphia, 1900.

We can warmly recommend the second edition of this work as a reliable guide to the practice of medicine. The book has been thoroughly revised, and numerous additions have been made especially to the sections on the diseases of the nervous system and to those on the infectious diseases. The author has had the advantage of the assistance of Dr. W. G. Spiller in the first-named subject.

In the treatment of typhoid fever the writer considers a liquid diet, especially milk, to be the safest form of nourishment, and although reference is made to the more liberal diet allowed by Shattuck, yet it is regarded as seldom necessary. The Brand treatment is warmly commended.

Reference is made to the work of Manson and Ross in the part played by the mosquito in the transmission of malaria, whilst Koplik's spots are described and illustrated with coloured plates borrowed from that writer.

The diagnostic technique in the examination of stomach contents is fully described, and we believe will be appreciated by many readers.

A useful chapter on general symptomatology has been introduced in the nervous system, and the illustrative cuts have been well selected.

The whole work is clearly written, and the various articles show a due sense of proportion. As a text-book this work is in the first rank, and whilst embodying the more recent methods of treatment, yet shows a wise conservatism in their adoption. The type is clear and the publishers' work leaves nothing to be desired.



## Society Proceedings.

### MONTREAL MEDICO-CHIRURGICAL SOCIETY.

*Stated Meeting, October 4th, 1901.*

JAS. PERRIGO, M.D., PRESIDENT, IN THE CHAIR.

#### **Congenital Absence of the Uterus.**

DR. A. MACKENZIE FORBES presented this specimen which he had obtained in the dissecting room at McGill University. See page 848.

In reply to questions from several of the members, Dr. Forbes stated that the Wolffian ducts and ureters were present, and there was no sign of any scarring or evidence of an operation having been performed upon the body of the subject.

#### **Pathological Specimens.**

DR. J. MACRAE presented a *Liver* which was extremely lobulated and irregular; it resembled grossly a syphilitic liver, but a reversal of the usual condition was present, the raised, lumpy, light-coloured parts proving to be liver tissue, and the depressed, darker parts, scar tissue. The patient had died of typhoid fever at the age of 26 and additional proof of syphilis was not determined.

Dr. Macrae also presented a *Congenital Tumour of the Toe*. This was a case of some interest clinically, as its appearance left some doubt of its nature. It proved to be a hæmangioma of congenital origin, and during the last few months it had grown rapidly.

DR. ADAMI considered that the liver shown had certainly not the appearance of the ordinary syphilitic liver with old gummata, in that the general appearance was not so much that of hob nails as of depressed scars. Here the large areas of fibrous tissue with the apparent compensatory overgrowth of liver tissue would point to some previous condition resulting in extensive destruction of liver tissue with the replacement of the dead portions by fibrous tissue and compensatory hypertrophy of the sound liver tissue. He doubted whether this could properly be regarded as a syphilitic liver.

DR. ARMSTRONG stated that the correct diagnosis of the tumour of the toe had only been made by the pathologist. The growth had begun as a little red spot involving chiefly one toe, but also extending to an adjoining one. In removing the tumour he had been able to secure the leading vessels going to the adjoining toe, and so it had only been necessary to sacrifice one.

**Sclerotic Endocarditis.**

DR. MACRAE also exhibited in conjunction with Dr. Gordon Campbell, the heart from a case reported at the meeting of the society, when the patient had been shown. See page 841.

DR. ADAMI enquired whether there had been any atheroma of the vessels or adhesions of the auricles, and Dr. McCrae replied that neither was present.

DR. W. F. HAMILTON pointed out the great disproportion between the size of the aorta and the pulmonary artery, the aorta being much smaller. The orifices of the two coronary arteries were also very unequal in size.

DR. MARTIN had not understood whether the extension of the dulness above had been explained. With regard to the difference in size of the coronaries, he thought that it was very common to have one much smaller than the other.

DR. LAFLEUR stated, in explanation of the apparent competency of the pulmonary valves post-mortem, that he had often observed that in arterio-sclerotic cases where there was great cardiac hypertrophy, murmurs were present during life from the stretching of the aorta at the valves, and after death the orifices and measurements would be found entirely normal.

**Congenital Hypertrophy of the Pylorus.**

DR. W. F. HAMILTON reported this case, which is published in the October number of the Journal, page 754.

DR. EVANS said that while Dr. Hamilton called his case Congenital hypertrophy of the Pylorus, he had not gathered from the report that there had been any record indicating an abnormal condition of the organ in childhood.

DR. ELDER asked if any attempt had been made to examine the patient under ether, and suggested as a possible explanation of the case that it was one of hour-glass contraction of the stomach, in which case the portion called by Dr. Hamilton the diverticulum would be the first portion of the hour-glass.

DR. ANDERSON asked whether there had been any adhesions of the posterior portion of the pylorus to the peritoneum, which might account in part for the condition.

DR. J. C. CAMERON, under whose care the patient had formerly been for nearly twenty years, gave some particulars of his past history. He had never been seriously ill except for an attack of typhoid fever five years previously, and had had no symptoms referable to the stomach at the time. He had looked and called himself a dyspeptic, but, beyond that, there had really never been anything ever noticeable. Dr.

Cameron's own feeling at first had been that the trouble was malignant. With regard to the patient's habits, he had worked regularly, never been laid up, and seemed to enjoy a fair amount of health. He was of a nervous disposition and complained of rheumatic pains.

DR. A. E. VIPOND referred to a child three months old, that he had seen in St. Thomas' Hospital in London with a history of persistent vomiting, and in which the post mortem had revealed a stomach of diminished size with extremely thickened walls. Lately, several cases had been reported in which operation had been performed for a similar condition with favorable results up to the present.

DR. HAMILTON, in reply to Dr. Elder, said that he had hardly felt justified in calling the case congenital hypertrophy, but at the same time it was not possible to give any definite name to the condition. He thought Dr. Elder had been under a misapprehension regarding the part described as a diverticulum; it was a small pouch measuring 3 cm. in width, into which one could only get the index finger.

With regard to the presence of adhesions, as referred to by Dr. Anderson, he was quite aware that adhesions had been recognized as a cause of such conditions. He had no recollection of any adhesions whatever, and there were no signs of peritonitis, recent or chronic.

With regard to Dr. Vipond's contention that the case could hardly have been congenital on account of the patient's age, he did not think would hold, as the duration of life depended upon the degree of pyloric obstruction. The cases that had terminated in a few months had been the most decided cases.

### **Endothelioma of Brain.**

DR. D. A. SHIRRES read a paper on a case of endothelial tumour of the cerebrum, which he thought was especially interesting since it seemed to indicate the etiology of some forms of cerebral growths, and to give corroborative evidence of certain cerebral localizations already known to us. From the case, also, could be determined a seemingly probable centre of the sixth nerve about the position of which little is as yet known. The same case also demonstrated what a few pathologists and experimentalists have stated, viz., that motor and sensory cortical areas are very closely related if not intermingled one with the other.

The history of the case was as follows:—The patient suffered from epileptic fits for two or three years which later became somewhat Jacksonian in type. He entered the Royal Victoria Hospital under the care of Dr. Stewart, some six years after the beginning of the fits with symptoms which pointed to cerebral tumour, headache, vomiting, optic

atrophy, paresis of the right hand and wrist, with disturbance of sensation of these parts, and paralysis of the left sixth nerve.

The autopsy revealed a conical bony exostosis on the under surface of the right parietal bone measuring about 2.5 cm. in each direction, and about 1 cm. in depth, probably the result of an injury (fracture of the inner table) due to a fall, while suffering from an epileptic fit. Corresponding to this exostosis was found a deep depression in the dura and the cortex of the brain in the region of the arm and the wrist centre. Immediately beneath the exostosis and adherent to the dura and pia arachnoid was a tumour consisting of a nodular somewhat cauliflower-like mass, lying in a distinct socket in the brain substance, which it pushed aside, but did not infiltrate. The surrounding brain substance, internal capsule, etc., was found intact. The cortical area of the sixth nerve seemed to be situated in the neighborhood of the hand and wrist centre. The paresis of the nerve was not thought to be due to pressure on the nerve root on its way to the orbit as frequently occurred, for no lesion could be detected macroscopically or microscopically to that effect.

DR. ADAMI recalled the fact that some two or three years ago in the Society a discussion had taken place upon the relationship of the motor and sensory areas of the cortex, and at that time two or three of the members present had upheld the view which had just been so well illustrated by Dr. Shirres, namely, that these areas practically coincided. With regard to the localization of the sixth nerve, he did not think that Dr. Shirres, while he had brought forward a fair amount of evidence in favour of his view, had proved absolutely the location of this cortical centre. The growth having been centrifugal in every direction, if the sixth nerve had not been at first affected and then subsequently become paralysed, the conclusion was that the growth was situated somewhere upon a belt or circle at the periphery of the tumour which had the starting point of the tumour as its centre. One could even go further than this and state that as the centres for the arm and hand were situated in front of the tumour, while no motor centres were situated behind, therefore, the sixth nerve centre was situated somewhere along the anterior half of this zone or circle. Further than this could not be safely affirmed.

DR. MARTIN, referring to what Dr. Shirres had said about operations being done to relieve pressure, said that he did not think that it was always necessary to open the skull to relieve fluid pressure, as it could often be accomplished by lumbar puncture.

DR. SHIRRES, commenting on Dr. Adami's remarks with regard to the location of the centre for the sixth nerve, said it was difficult to



locate it with any degree of precision, yet it seemed to him to be around the arm and hand centres.

He thought that Dr. Martin was right in believing that lumbar puncture should be undertaken more often than it was in connection with such cases as he mentioned. This man was suffering from a cerebral growth, the location of which was very obscure. He had certainly optic neuritis with headache and vomiting, but he had one symptom wanting, in that his knee jerks were absent. In the fifteen cases of brain tumour which had come under his notice every one showed increased knee-jerks. Dr. Stewart had suggested as a possible explanation, that the tumour might involve the frontal region.

It was pretty hard to tell at autopsy whether cerebral fluid was abundant or not, but he thought it certainly had been before death, and there was a distinct trace of degeneration in the posterior columns at the top of the cervical cord. In a recent number of *Brain* there was an article on this point, showing that one might have the cerebro-spinal fluid lodging at the top of the cord, and then degeneration. Whether in the present case the degeneration involved also the dorsal and lumbar portions of the cord he was unable to say, not having this portion to examine, but if so, it might account for the absence of knee jerks.

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*Stated Meeting, October 18, 1901.*

JAMES PERRIGO, M.D., PRESIDENT, IN THE CHAIR.

Drs. W. H. Dalpé and E. M. von Eberts, of Montreal, were elected resident members.

**Gangrenous Cellulitis Resembling Extravasation of Urine.**

DR. A. E. GARROW read the report of this case.

DR. ADAMI said that looking into the similar cases in Welch and Howard's reports, there was only one similar to this, where the condition had been caused by traumatic rupture 4 cm. above the anus, and the process then extended through the right sciatic notch down to the gluteal region and thence down the thigh. Quite a large proportion of Welch's cases had originated from ulcers and similar conditions in connection with the intestines, but he also mentioned two cases in which the condition had occurred in connection with ulceration of the stomach.

DR. ENGLAND thought the condition described by Dr. Adami of these peculiar small mulberry hæmorrhoids, just at the beginning of the anus, was not an infrequent one and often the cause of fistula. That the infection should start from this point and extend to the scrotum and

groin was peculiar and interesting. He wished to know if there was anything in the patient's history, such as alcoholism or diabetes, which would render him more liable to suffer from severe infection from a slight cause. Another point he would like to hear something about was how a gangrenous condition of the scrotum could lead to orchitis, which he understood this patient had had. The ordinary anal fistula, as a rule, ruptured externally and the external opening persisted, while in this one the external opening did not form, but the pus passed beneath the skin and extended upwards over the groin.

DR. ELDER was much interested in the case, showing as it did that a lesion beginning in the rectum could follow clinically the course of extravasated urine and give practically the same clinical appearance, except that the infection was more violent and the destruction of the surrounding parts of a greater degree. One could easily understand how, if the opening of the fistula took place between the superficial and deep fascia, it had travelled exactly in the line that it did. Such a thing might happen more often than one was accustomed to meet with. It was fortunate for science that the case had come to autopsy and the course of the infection had been thus definitely determined.

As regards the course of temperature he was of the opinion that these cases and those of extravasation of urine were usually associated with low temperature, and were also liable to sudden death. The methods of treatment adopted by Dr. Garrow, he thought the best that could have been done under the circumstances, as it would have required a very fine examination to detect the source of the fistula and, even if it could have been detected, the result would not have been different. The important point to be learnt from the report was that these cases were liable to come on insidiously, and this fact should put men on their guard.

DR. GARROW replying to Dr. England, stated that there was no special idiosyncrasy in the patient which would render him more than usually susceptible to infection. He had already pointed out the chief features of the case; one was the enlarged testicle pointing to a deep urinary infection which, however, had not the hard nodular feeling so characteristic of orchitis; the other point was the travelling of the infection, which was not in accord with that of urine extravasation. The clinical history and appearances differed from urinary extravasation in that there was slight inflammation of the testicle, and then without any other event the formation of two fawn-coloured spots: in this case there was a selection of infection, the course followed being along the lymph channels, a periorchitis appearing first and the structures of the cord and of the testicle not being invaded. The serous membranes were

absolutely intact and did not show the presence of any acute hydrocele. While he had not discovered the internal fistula, he had made a careful examination of the case with that possibility in view, as was his invariable rule when a patient complained of piles. He had never yet seen a case of internal or blind fistula which could not be detected by palpation, as when such a condition existed one could detect it by the firm fibrous cord. Again, at no time would the patient admit of having had any swelling or tenderness, or having passed any matter or blood per rectum. He complained of piles, and Mr. Reginald Harrison, under whose care he had been, regarded him as a gouty patient, although, if excess of lithic acid was any criterion, it had not been present, neither was there any definite evidence in the kidneys post-mortem.

DR. ADAMI said that it was interesting, in regard to the connection between the history and the clinical evidence, that this man had had indefinite, obscure pain at the anus, which he had put down to piles, that he had been treated as if for piles, and that there were no marked piles present, but at most a slight elevated swelling. Another interesting point was that these cases of emphysematous gangrene were probably never in themselves primary, the usual sequence of events being, first, some slight suppurative disturbance, and then the infection by the *Bacillus capsulatus*. Indeed, the *B. capsulatus* was an anaërobic organism, and consequently in a large number of cases we have an aërobic organism first present, taking away the oxygen and so preparing the ground for the development of the other organism. An ordinary fistula going on slowly would prepare the ground for the *B. capsulatus*.

#### **Tuberculin as an Aid to Diagnosis in Surgical Affections.**

DR. J. M. ELDER read this paper, which will be found at page 759 of the October number.

DR. GARROW looked upon the question of employing tuberculin in the diagnosis of early tuberculous lesions from a surgical point of view, as one of great import. He had been employing it more or less regularly for a year or so and, practically, in all cases in which the tuberculin reaction had been obtained prior to operation, operative interference had proved the case to be tuberculous. This was particularly so in regard to gland cases, but he had had no experience with tuberculous peritonitis. He was perfectly satisfied that it was of value in early bone lesions, and cited a case of disease of the right tibia near the condyle, in which the reaction had been found present twice, and which, after two months, had returned to hospital with a well-marked myeloid sarcoma, and tuberculin failed to give a reaction.

He also related a case in a young girl with pain in the carpus, wrist joint, tendon sheaths, and extending up to the elbow, presenting much

the appearance of gonorrhoeal arthritis except for great tenderness and swelling all over the tarsus. Careful examination failed to reveal the presence of gonococci, and small doses of tuberculin had also failed. He had been in the habit of using only  $\frac{1}{2}$  or 1 mg., but now would wait a few days and try larger doses as Dr. Elder had done.

DR. W. E. DEEKS had a word or two to say with regard to tuberculin, on general principles. Dr. Elder had stated that there were practically no local or constitutional results following the use of tuberculin, but he would like to know whether the patients had been under observation sufficiently long to determine whether or not this was so. An encapsulated focus in the glands or any part of the body might give rise to no trouble and be practically safe to the patient until tuberculin was given, and this might result in the breaking down of the barrier that existed and the setting free of the toxins into the system, followed by a reactionary temperature; and further, by possible absorption of the bacilli themselves and the setting up of new foci, and, in some cases, of general tuberculosis at no distant date. In his opinion we were not justified in taking this risk. If, within a couple of days at most after the reaction the surgeon operated and removed the diseased tissue, no harm would result, but in a deep-seated condition, he thought tuberculin, as used at present, was a dangerous proceeding.

DR. MORROW suggested that there was probably some difference in the tuberculin as prepared by Dr. Trudeau and the original Koch's tuberculin.

DR. E. R. BROWN asked if Dr. Elder had had any experience with throat cases. When tuberculin was first introduced laryngologists believed that they had in it a means of deciding the nature of doubtful cases, but experience had shown that the use of this means in tuberculous cases frequently resulted in the production of new foci in the larynx, followed by general tuberculosis.

DR. E. A. ROBERTSON wished to know if Dr. Elder had any explanation to offer for the non-reaction in tuberculous peritonitis. He had seen this means of diagnosis used in animals, and had been struck with the remarkable accuracy of the results obtained as verified by post-mortem.

DR. MACPHAIL had examined specimens of tuberculin from different sources, and found that some contained the live bacilli and some did not. He thought that one should be very particular about testing this material before using it.

DR. ELDER, in reply, thought that one should begin with a small dose and gradually work up, not proceeding to the larger doses when a reaction was obtained with smaller ones. Still, in some cases, it was not until the dose had been increased to 3 m.g. that the typical reaction



appeared, and even here there were no signs of constitutional or local trouble beyond the mere elevation of temperature.

In reply to Dr. Deeks, he could only state that he was simply looking at these cases from a surgeon's point of view. Where one had a sleeping internal condition, he thought all were agreed that it was better not to run the risk of waking it up. So far as his experience went, he had seen no constitutional disturbance whatever. He would judge that if the patient was to develop tuberculosis in the way mentioned by Dr. Deeks, that two years would be necessary to establish it, and he had not observed his patients for two years after the injections were given. He agreed that all tuberculin should be tested before use. As to the explanation for the absence of a reaction in tuberculous peritonitis, he was unable to give it.

Dr. Elder also stated that he had had no experience with throat cases. He had undertaken the work purely to satisfy himself of the value of the test and because of the scarcity of literature bearing upon the subject.

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*Stated Meeting, November 1, 1901.*

J. W. STIRLING, M.B., VICE-PRESIDENT, IN THE CHAIR.

Drs. H. B. Cushing and F. B. Jones, of Montreal, were elected resident members.

**Carcinomata of the Body of the Uterus and of the Cervix.**

DR. WILLIAM GARDNER gave the following account of this case.

The first specimen is one of *carcinoma of the body of the uterus*, and as I considered it an exquisite specimen of the kind, I have brought it forward to-night. The person from whom it was removed presented a perfectly characteristic history. She was unmarried, and suffered from a watery discharge for four months, and the scrapings from a curettage, on being submitted to an expert, showed the presence of carcinoma. The operation proved difficult on account of the very narrow vagina and the firm adhesions of the uterus to adjacent parts. After detaching the cervix the operation was completed through the abdomen. The patient was put to bed in a very bad condition from profuse hæmorrhage, but rallied.

The specimen is a good example of carcinoma of the body of the uterus, which usually occurred in women who had passed the so-called change of life, in a few after many years. In my experience the symptoms which this woman presented, namely, hæmorrhages and watery discharge, indicate carcinoma in the majority of cases. The solitary excep-

tion is the slight hæmorrhage of chronic, cicatricial vaginitis, which might possibly simulate and suggest carcinoma. In these cases, however, the hæmorrhage is excessively small in quantity and is not associated with watery discharges. Singularly enough, I have met with a number of cases in which women long past the menopause, some of them married and the mothers of children, have suspected that the discharge of blood was the return of menstruation.

The other specimen is a *carcinoma of the cervix*, and perhaps I owe an apology to the members for presenting a specimen of such a common disease, so infinitely common as compared with carcinoma of the body.

The patient was a married woman of 35 years, admitted to the hospital for symptoms of rather subacute pelvic inflammation, and not for any symptoms suggesting carcinoma. On examination, the condition of the cervix was so suspicious that I excised a wedge-shaped portion and had specimens made, and these amply confirmed my suspicions. Extirpation was then performed. The uterus and cervix give clear evidence of laceration and relatively slight evidence, so far as the eye goes, of the nature of the disease. The specimens made before operation are a most exquisite example, in my opinion, of carcinoma of the cervix uteri grafted upon a laceration. This operation, from the extensive adhesions, was also rather difficult.

DR. CHAS. E. GURD said that the first specimen was a typical adenocarcinoma of the uterus. On the surface there had been more or less ulceration, then going inwards towards the muscle, one got the adenocarcinoma, in which the carcinoma had kept the glandular type, but the lining cells appeared to be more of the squamous epithelial type, and in several layers. Going further in again, the muscle seemed to be separated by the carcinomatous tissue. In all the sections cut the muscle was infiltrated.

The second specimen was of great interest on account of the very early malignancy, showing in one part practically normal squamous epithelium, in another, down growth of the squamous epithelium into the normal tissue of the cervix, and further on, actual nests with small celled infiltration around them. The clinical diagnosis was most brilliant in a case like this.

DR. A. LAPHORN SMITH had listened with great interest to the reports of these cases, especially to the first one on account of its rarity. He had not seen a case since one seen ten years ago, in which the whole of the body of the uterus was a mass of adeno-carcinoma, and the cervix was almost entirely free up to the internal os. He considered the prognosis of the first case much more favourable than that of the second. From the researches made at Johns Hopkins Hospital, it was shown

that in only one case out of twenty were the glands infected in cancer of the body; while the reverse was true of cancer of the cervix. Out of thirteen cases which had come under his notice, the duration of life had varied between six years and eleven months.

Another point brought out was the value of microscopical examination of the curettings. He felt sure that many more cases would be detected if this procedure was adopted. He believed that when a woman past the menopause had a discharge of any kind with hæmorrhage, she should be considered as having cancer of the uterus until it was proved to the contrary.

DR. F. A. LOCKHART thought the first case was of great interest, as showing how one could have such a grave disease present with such little disturbance. He referred to a case of his own, a woman aged 60 and weighing 200 pounds, who had been sent to him on account of hæmorrhages. The history was that two years previously she had had some pulmonary trouble and from that time on she had had periodical discharges of blood from the uterus at intervals of about a month. The menopause had come on at 48, in the usual manner, and her previous sexual history had been normal. A slight leucorrhœal discharge present had some faint odour. He had decided to do a diagnostic curetting, but, on dilating the cervix, found such a condition present, that he removed the uterus at once; and the pathological report showed that malignant disease had been present for some time. The disease was adeno-carcinoma of the uterus, affecting all parts of the endometrium and adjacent muscle, the fundus being most involved, the cervix next, and the tissue between these least of all. It looked as if the disease had begun in the fundus, dipped down beneath the endometrium, and cropped out again at the cervix.

DR. GARDNER, in reply, spoke in reference to the prospects in these cases. It was undoubtedly true that those past the menopause ran the better chance, and yet sometimes they were very disappointing. One of his own cases had now lived 12 or 13 years, another 7 years, and a third 5 or 6 years. One reason why extirpation of the uterus was more favourable after the menopause, was that the nutrition of the organ was then relatively low and the growth of the disease relatively slow.

#### **Missed Abortion.**

DR. F. R. ENGLAND presented the specimen and read the report of this case. See page 848.

DR. BULLER enquired if all these cases were due to the same cause.

DR. ENGLAND did not think he could say anything about that, further than that the cause was not well understood.

DR. D. F. GURD said that in some of the cases the cause lay in mal-

formation of the foetus. He had shown a case before the Society in which the foetus had four arms and four legs, and evidently their inability to develop had had something to do with its death.

DR. A. LAPHORN SMITH, from the fact that the foetus had not been expelled until the full period of nine months of gestation had passed, argued that the uterus was more concerned than the foetus in retention of the dead ovum.

DR. ENGLAND asked for an expression of opinion on the course to pursue when such cases were recognized. His own practice had been not to interfere but to keep the patient under observation until the ovum was expelled naturally, or, in the event of any complications occurring, to give an anæsthetic and empty the uterus.

DR. W. GARDNER thought that this case of Dr. England's presented extreme delay in expulsion of the ovum. In a large number of cases of abortion, where the foetus had died from various reasons, it was recognized that it is usually not expelled for a period of from ten days to some months. He would advise treatment only when the presence of symptoms called for them. Here, where there was no hæmorrhage or pain, the case had been best left to nature.

DR. GARROW asked if there had been any evidence of syphilis, and Dr. England replied that there had been none.

DRS. WYATT JOHNSTON and CHAS. GURD examined the ovum and reported it to be that of the third month but did not discover any evidence to show why it had died. There was also no evidence of disease in the placenta or membranes.

#### **Clinical Notes on the Use of Suprarenal Extract in Cardiac Conditions.**

DR. W. E. DEEKS read this paper, which is published in full at page 845.

DR. W. S. MORROW had seen the first patient mentioned by Dr. Deeks during the latter's absence from the city, and corroborated what he had said about the inefficacy of the usual cardiac tonics in this case.

The speaker had used suprarenal extract himself considerably, and cited several cases in evidence of its value both as a styptic and cardiac tonic. He had failed, however, to get a good result with it as an intra-uterine douche in a case of menorrhagia.

#### **The Diagnostic Value of Hæmoglobin in Syphilis (Justus).**

DR. ANDREW MACPHAIL read a paper with the above title. See page 843.

DR. GORDON CAMPBELL said that he had some slight experience with the Justus reaction for syphilis. He thought that Dr. Macphail's con-



ception of the test, as described by Justus, was not entirely correct. Justus stated that when the symptoms of syphilis relapsed, the reaction would be absent; and when the symptoms returned, the reaction would reappear. In order that one should get the reaction in cases of general paresis, one would have to include the symptoms of general paresis as symptoms of syphilis. It was well known that in all cases of syphilis, early or late, mercury and iodide of potassium were specifics, or at least always influenced the symptoms. Neither mercury or the iodides had any effect upon the course of general paresis, and for this reason, taking Justus' own description of his reaction, he did not think one ought to expect to obtain any reaction in this class of cases.

With regard to his own experience, he had used it on five or six cases, four of which were undoubtedly syphilitic, showing active symptoms which yielded to mercury or iodide of potassium. Of these four, only one gave a reaction, and it was most decided, the hæmoglobin falling from 70 per cent. to 50 per cent. within the first few days of treatment, and gradually returning to 70 per cent. and above this, as the signs of syphilis disappeared. The patient was a woman, aged 23, who had never been under treatment for syphilis. Two cases of marked anæmia, without any evidence of syphilis, had failed to give any reaction. The speaker thought that, from the reports which had appeared since Justus published his work, that the test was obtained in from 70 to 80 per cent. of undoubted syphilitics.

DR. MACPHAIL stated, in reply, that the examinations had been carried out under the six propositions made by Justus.

#### **Administration of the Civic Board of Health in connection with Contagious Diseases.**

DR. J. E. LABERGE set forth in a short paper the recent changes made in the Montreal Board of Health, with regard to the administration of contagious diseases. This paper will appear in the December number.

DR. JOHNSTON said that one point which arose in connection with this paper was the question of the need of greater care in making an examination after diphtheria to see if the infection still existed in the patient's throat. The older view that one examination was sufficient was now pretty well abandoned, and boards of health were now asking for two successive negative examinations, and were finding it very important in this matter to inoculate two swabs, one from the nose and one from the throat, in order to be sure that infection had not escaped observation. Dr. Johnston thought that it would help very much if the city had a board of medical men co-operating with them, as in New York it was found that this plan of having physicians act as medical inspectors at a comparatively small salary was very efficient. The

public, being brought into contact with the medical department of the board, appreciated it more than if it were merely the sanitary or health officials.

DR. ENGLAND said that when one telephoned to the health department to make an examination of the drains in a house where typhoid, scarlet fever, or diphtheria had occurred, the department invariably replied that this would be done after disinfection. He thought that if the drains were the cause of the malady the other inmates of the house were exposed to infection while the department was waiting for the disinfection of the premises.

DR. LOCKHART thought an important part of the department's duty was to educate the public regarding the danger of infection to themselves and others. There were a large number of families in the city in which this danger was ignored, and no precautions were taken to prevent the spread of disease. He was glad to see that two physicians had been summoned for failing to notify infectious disease in their practice. The nurses, too, in some cases were either ignorant or failed to take proper precautions after nursing cases of infectious disease.

DR. GIRDWOOD drew attention to the need of an ordinance prohibiting spitting in the streets, or at least on the sidewalks. This Society, some years ago, had sent a communication to the street railway showing the danger of spitting in the cars, and the result was that they had put a stop to it.

DR. LABERGE, in reply, said that there were many things mentioned in his paper which it was desirable should be carried out but which they had been unable to enforce as yet. He suggested that, if the Society thought wise, a committee might be named by the Society to co-operate with the health department; the French medical society were doing this. In reply to Dr. England, he stated that the drain inspector was not under his control, but he believed the facts stated to be correct, and that the inspection was not done until after the house had been disinfected.

T H E

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

EDITED BY

THOS. G. RODDICK,  
A. D. BLACKADER,  
GEO. E. ARMSTRONG,  
WILLIAM GARDNER,  
F. G. FINLEY,

JAMES STEWART,  
J. GEORGE ADAMI,  
G. GORDON CAMPBELL,  
FRANK BULLER,  
H. A. LAFLEUR,

WITH THE COLLABORATION OF

WYATT JOHNSTON.  
C. F. MARTIN,  
J. M. ELDER;  
D. J. EVANS,  
A. E. GARROW.

T. J. W. BURGESS,  
J. W. STIRLING,  
F. A. L. LOCKHART,  
W. F. HAMILTON,  
E. J. SEMPLE.

H. S. BIRKETT,  
KENNETH CAMERON,  
C. W. WILSON.  
A. G. NICHOLLS,  
W. W. CHIPMAN.

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## SMALLPOX.

During the past few years smallpox has been epidemic in many States of the Union, and there have also been several centres of the disease in Canada. Epidemics have broken out in the West, in Ontario and Quebec, and, judging from the reports from neighboring municipalities, there would seem to be a very real danger of much further extension in the near future.

Fortunately, the type of disease at present prevalent, is, for the most part, of a remarkably mild variety. So mild indeed is it, that its true nature has not been recognized in some localities for months after its appearance. It has been mistaken for chicken-pox, or it has been termed Cuban or Philippino itch. There seems to be no proof that the disease has been imported from either of these countries, where the type of disease is not the mild form which has spread over so many districts of the North American continent.

The malady is ushered in by fever which is sometimes as high as in the ordinary form of the disease; vomiting and headache are as a rule not very pronounced, and may be completely absent. The cutaneous lesions come out on the third day, or exceptionally, as late

as the fifth or sixth day. They appear in the same sites, and in the same order as in ordinary variola. The number of papules may vary from ten or twelve to many thousands, they differ, however, from the ordinary form of variola in passing through their stages of evolution more rapidly, and in involving only the superficial portions of the skin. Hence, in the healing process, they leave no permanent scars, and there is seldom any secondary septic fever. After the rash appears the patient feels well, and frequently goes about forming a continuous centre of infection.

That the disease is a true form of smallpox has been admitted by all who have had an extensive experience of this disease. Welsh, for instance, is emphatic in his opinion that the disease in question is true smallpox, and this view has been recently reaffirmed by the American Medical Association. The remarkable manner in which the unvaccinated are picked out is perhaps the strongest proof of the true nature of the malady.

Although so mild in its manifestations there are some well marked instances in which severe and fatal forms of the disease have arisen from contact with the milder cases, and doubtless, those who have seen much of the affection could readily multiply such instances.

The very mildness of the disease is, from a public health standpoint, the most dangerous feature of the epidemic. Patients suffering from the malady have been repeatedly been observed walking about, working, or travelling in public conveyances, and should the disease at any time assume a virulent type, it is appalling to contemplate the ravages it would make in an unvaccinated community. The only safeguard against such a contingency is thorough vaccination and revaccination. Much prejudice has existed against this measure among certain classes of this province, a prejudice which has had some foundation in the septic and erysipelatous arms so often seen in the 1885 epidemic, and resulting from the use of impure vaccine. The lessons of that epidemic have, however, not been lost, and the public belief in the efficacy of vaccination has been greatly strengthened by the mortality amongst the unvaccinated at that time. Mothers often object to more than a single vaccine insertion, but a little pressure and explanation on the part of the medical practitioner is usually sufficient to overcome this opposition.

The Provincial Board of Health is acting promptly for the good of the community in issuing an order to all municipalities to insist on vaccination in industrial and educational establishments, a measure which will meet with the hearty approval and support of the entire medical profession, and one which will go far to prevent the affection from assuming extensive proportions.



At the recent election of the College of Physicians and Surgeons of the Province of Quebec the following were chosen to represent the profession for the next three years:—

District of Montreal :—

1. Drs. A. R. Marsolais and R. C. Laurier, Montreal.
2. Drs. R. Boulet and J. H. Cartier, Montreal.
3. Drs. J. A. Macdonald and G. A. Brown, Montreal.
4. Dr. J. G. Beaudry, St. Jacques d'Achigan.
5. Dr. L. A. Fortier, St. Vincent de Paul.
6. Dr. E. L. Quirk, Aylmer.
7. Chas. Marshall, Huntington.
8. Dr. J. D. Pagé, Waterloo.
9. Hon. Dr. Jean Girouard, Longueuil.
10. Dr. Ern. Choquette, St. Hilaire.
11. Dr. E. H. Prevost, Sorel.
12. Dr. Théo. Cypihot, St. Cunegonde.

District of Quebec :—

1. Drs. A. Vallée, M.D., Brochu, and C. R. Paquin, Quebec.
2. Drs. A. Jobin, F. X. Dorion, and J. Marcoux, Quebec.
3. Dr. J. E. Ladrière, Lévis.
4. Dr. M. Brophy, Ste. Foye.
5. Dr. L. E. Beauchamp, Chicoutimi.
6. Dr. Tan. Fortier, Ste. Marie de Beauce.
7. Dr. L. M. Moreau, l'Islet.
8. Dr. F. J. Langlais, Trois Pistoles.
9. Hon. Dr. J. B. R. Fiset, Rimouski.

District of Three Rivers :—

1. Dr. L. J. O. Sirois, St. Ferdinand d'Halifax.
2. Dr. L. P. Normand, Three Rivers.
3. Dr. L. A. Plante, Louiseville.

District of St. Francis:—

1. Drs. P. Pelletier and J. O. Camirand, Sherbrooke.
2. Dr. F. McMorine, Richmond.

Universities :—

McGill University—Drs. Robert Craik and H. A. Lafleur.

Bishop's University of Bishop's College—Dr. S. F. W. Campbell and J. C. McConnell.

Laval University, Montreal—Drs. E. P. Lachapelle and Demers.

Laval University, Quebec—Drs. L. J. Simard and Catellier.

### MEDICAL LIBRARY, MCGILL MEDICAL COLLEGE.

The library of the McGill Medical College, which has been closed for the last two months is again open to readers. In addition to the alterations in reading rooms, a handsome stack room has been added, which very much increases the capacity of the library.

Among the recent gifts to the library some very rare and interesting works have been presented by Dr. Osler, Dr. Morrow, and Dr. Dawson. Dr. Osler, who is known as a collector of rare editions of the old masters in medicine, while in Europe this summer secured some of these editions, and most generously presented them to the McGill Medical Library. These are:—Page's facsimile reprint of Linacres' Edition of Galen's *de Temperamentis*, and Jebbs' edition of *Some of the Rare Works of Caius* (the original of which are practically out of reach. Boyle's *Natural Philosophy*, 1667, of which a good idea of the state of medicine about the middle of the 17th century can be obtained, and also Harvey's *Degeneratione Animalium*, and Harvey's *Anatomical Exercitationes Concerning the Generation of Living Creatures*, 1653.

Among the volumes presented by Dr. Morrow is one which will be of interest to Canadians in having the signature of a former Governor of Canada, Sir George Prevost. He has also presented the following: Swain's *Panacea*, the *Nouveau Dictionnaire de Médecine, de Chirurgie et de l'art Vétérinaire Tome, 1—4 and 6, 1772*; the *History of Mineral Waters of Ireland, 1757*; *Histories of Various Cases*, by C. Mortimer, M.S., 1745, and the *Medical Register of New York, 1868-69*.

These recent gifts will be a welcome addition to the already valuable collection of old books in the library.

#### FOR QUARTER ENDING APRIL 30, 1901.

##### *Books and Journals Presented by:—*

Aberdeen University.

Proceedings of the Anatomical and Anthropological Society, 1899-1900.

Adami, J. G., M.D.

Lyon Medicale, 5 Vols., 1885-98.

Information Concerning the Angora Goat, U.S.D.A., 1901.

Medical Chronicle, 1899-1900.

Admiralty, London, Eng., Statistical Report of the Health of the Navy, 1898.

Allbutt, T. C., M.D.

Science and Mediæval Thought, 1901.

American Academy of Railway Surgeons, Trans., 4 Vols., 1896-99.

American Medical Association, Journal, 1900.

American Climatological Association, 3 Vols., 1895-99.

American Association of Physio-medical Physicians and Surgeons, Pro., 1897.

American Medico-Psychological Association. Trans., 1900.

- American Orthopedic Association. Trans., 1900.  
 Association of American Physicians. Trans., 1900.  
 Association of New York Life Insurance Medical Directors, 2 Vols.  
 Association (L') Française d'Urologie, 1899.  
 Bacon, G., A.B., M.D.  
     Manual of Otology, 1900.  
 Ballantyne, J. W., M.D.  
     Teratologie, 1895.  
 Berliner Klin. Woch., Editors.  
 Blackader, A. D., M.D.  
     Archives of Pediatrics, 1899.  
     Textbook of Pharmacology and Therapeutics, by A. R. Cushny, M.D., 1899.  
     Practical Therapeutics, by H. A. Hare, M.D., 1898.  
 Boston City Hospital, Medical and Surgical Reports, 1900.  
 Bristol Medico-Chirurgical Library, 13 Vols., 1885-1899.  
 Brooklyn Engineers' Club, 1900.  
 Brooklyn Medical Journal, Editors.  
 Brussels University, 1 Vol., 1900.  
 Cameron, J. C., M.D.  
     American Public Health Association Reports, 1901.  
     American Journal of Obstetrics, 1898.  
     Bristol Medical Journal, 2 Vols., 1899.  
 Clinical Society of London. Trans. Vol. 33, 1900.  
 Cameron, K., M.D.  
     Canadian Medical Review, 1898.  
 Chicago Medical Recorder, Vol. 1-11, 1891-1896.  
 Columbia University, College of Physicians and Surgeons.  
     Studies from Dept. of Pathology, 1899-1900.  
 Columbus Medical Journal, Editors, Vol. 23, 1899.  
 Curtis, W. J., B.S., M.D.  
     Essentials of Practical Bacteriology, 1900.  
 Dominion Medical Journal, Editors, 3 Vols.  
 Dürck, H., M.D.  
     Atlas and Epitome of special Histology, 1900.  
 Dawson, R., M.A., M.D.  
     Fifty years of Work in Canada. Biographical Notes by Sir Wm. Dawson, C.M.G., LL.D., 1901.  
 Evans, D. J., M.D.  
     American Journal of Obstetrics, 1900.  
     Obstetrics, by D. J. Evans, M.D., 1901.  
 Finley, F. G., M.A., M.D.  
     Progressive Medicine, 2 Vols., 1900.  
 Fisher, H., M.D.  
     Vade Mecum de Therapeutique Chirurgicale des Medecine-Praticians.  
 France (La), Editors, 1898.  
 Günther, M. D.  
     Thirty-first Jahresbericht des Landes Medecinal Collegium über das Medicinalwesen im Königreiche Sachsen auf das Jahr., 1900.  
 Harvard Medical Alumni Association, 2 Vols, 1900.

Hektoen, L., M.D.

Atlas and Epitome of Special Pathological Histology by H. Dürck, M.D.,  
Translat. by L. Hektoen, M.D., 1900.

Huxley, Leonard, Esq.

Life and Letters of Thomas Henry Huxley, 2 Vols., 1900.

Indian Government Reports, 2 Vols., 1900.

Jenson, J. G. J.

House Drainage and Sanitary Fitments, 1900.

International Medical Magazine, Editors, 1899.

Johns Hopkins Hospital Library.

Journal of Comparative Neurology, 2 Vols.

Johnston, W., M.D.

Missouri State Board of Health, 1899.

Practical Hygiene, by Harrington, 1901.

Pathological Anatomy and Pathogenesis, Zeigler, 1884.

Pathologischen Mytologie, Baumgarten 11, 1890.

Materia Medica, Cullen 2 Vols., 1789.

Journal of the American Medical Assoc., 1900.

Journal of Inebriety, Editors, 1898.

Journal of Applied Microscopy, 1898.

Lafleur, H. A., M.D.

Vaccination, its Natural History and Pathology, by S. M. Copeman,  
M.D., 1899.

Lawford, J. B., M.D.

Ophthalmic Review, 5 Vols., 1889-92.

London School of Tropical Medicine.

Reports 1899-1900.

Louisiana State Board of Health, 9 Vols., 1872-1900.

Louisiana State Medical Society, Trans. 3 Vols., 1894-98, 1900.

Luzerne County Medical Society, Trans., 5 Vols., 1895-1900.

Manhattan Eye and Ear Hospital Reports, 3 Vols., 1894-1897.

Maryland Agricultural Experiment Station, 2 Vols., 1898-1900.

Massachusetts State Board of Health, 1900.

Melbourne University, 1900-1901.

Merck's Archives.

Medical Librarian's Association.

Annals of Ophthalmology, 1899.

Berliner Kl. Woch, Vol. 37.

Michigan Registration Report, 1898.

Middlesex Hospital Report, 1899.

Montreal Medical Journal, Editors.

Albany Medical Annals, 1900.

Montreal Medical Journal, 1900.

Congress International de Medecine, 1900.

Nancrede, C. B., M.D.

Lectures upon the Principles of Surgery, 1899.

Essentials of Anatomy and Manual of Practical Dissections, 1895.

Newberry Library.

New York Medical Journal, 7 Vols.

New Hampshire Medical Society, Trans., 1900.



New Jersey State Agricultural Experiment Station, 4 Vols., 1880-1889.  
New York Academy of Medicine.

Fortsschritte der Medicine, 2 Vols.

New York Agricultural Experiment Station, 7 Vols., 1893-1900.

New York Eye and Ear Infirmary Reports, Vol. 1-5, 1893-97.

New York State Board of Health, 2 Vols., 1899.

Nottingham, City of, Health Report, 1899.

Ontario, Report of Registrar-General, 1899.

Ophthalmological Society of London, Trans., 1900.

Ophthalmological Society of Great Britain, 3 Vols., 1881-93.

Ophthalmological Society Catalogue, 1899.

Ottawa Government, 4 Vols.

Pennsylvania State Board of Health, 4 Vols.

Pharmaceutical Journal, 1900.

Post-Graduate Fund.

Therapeutische Monatshefte, 1900.

Anatomischer Anzeiger, 1886.

Fortsschritte der Medicine, 4 Vols., 1890-1898.

Gazette des Hopitaux, 3 Vols., 1898-1899.

Post-Graduate Journal Editors.

Quebec Board of Health, 1899.

Reading, Eng., Pathological Society, 4 Vols., 1896-1900.

Revue (La) Medicale, Editors, 3 Vols., 1900.

Riehl, M.D.

11. Internationales Dermatologischer Congress, 1893.

Rhode Island State Board of Health Reports, 1882-1896.

Registration Report, 29 \* 45, 1881-97.

Ruddeme, M.D.

Incompatibilities in Prescriptions, 1900.

Ruttan, R. F., M.D.

La Province de Québec, 1900.

Yearbook of Newfoundland, 1901.

Royal College of Surgeons, England.

Descriptive and Illustrated Catalogue of Physiological Series of Comparative Anatomy contained in the Museum, Vol. 1, 1900.

Pathological Report, 1900.

Royal Academy of Medicine in Ireland, Trans., 1900.

St. Paul Medical Journal, 1900.

Shepherd, F. J., M.D.

Memaria de la Cara Hospital de Son Lazare, 1890, 1899, 1900.

Associations de dependientes des Comercio de la Habana, 1900.

Dominion Medical Monthly, 2 Vols.

Experimental Study of Children, by Dr. Macdonald, 1899.

Smith, M.D.

Lectures on Medical Jurisprudence and Toxicology, 1900.

Stewart, J., M.D.

Mind, 3 Vols.

Sutton, B. J., M.D.

Diseases on Women, 1900.

U. S. Department of Agriculture, 2 Vols., 1900 and 1901.

United States, Report of the Surgeon-General of the Army, 11 Vols., 1886-99.

United States Surgeon-General's Library.

Index Catalogue, Vol. 5.

Woody, S. E., M.D.

Essentials of Medical Chemistry, 1900.

#### NEW BOOKS ADDED.

Cyclopædia of the Diseases of Children. Keating, 1899.

Edinburgh Medical Journal, 1901.

Handbuch der Hygiene, Bds. 5-9, 1899-1900.

Introduction to the Study of Chemistry, Remsen, 1900.

New York Medical Journal, 1900.

Revue de Chirurgie, 2 Vols., 1899-1900.

Revue de Medicine, 2 Vols., 1899-1900.

Textbook of Histology. Böhm & VonDavidoff, 1900.

#### BULLETINS, PAMPHLETS, CALENDARS, REPORTS, ETC.

##### *Presented by:—*

Anderson's College, Glasgow, 1.

Adami, J. G., M.D., 1.

Breslau, 1.

Berlin-Friedrich-Wilhelme Universtat, 1.

College of Physicians and Surgeons of Quebec, 1.

Fletcher Free Library, Burlington, 1.

Guy's Hospital Medical School, 2.

Georgia Agricultural Experiment Station, 3.

Harvard Medical School, 1.

Heidelberg University, 1.

Hatch Experiment Station, 2.

Jackson, F. S., M.D., 1.

Johns Hopkins Medical School, 1.

London Hospital and Medical College, 2.

Montreal Medical Journal, Editors, 22.

Maryland Agricultural Experiment Station, 17.

Massachusetts General Hospital, 1.

Nottingham, City, 1.

New Jersey Agricultural Experiment Station, 80.

Protestant Hospital for Insane, 1.

Royal College of Edinburgh, 1.

Royal College of Physicians of Ireland, 1.

Russell, W. W., M.D., 1.

Sherwell, S. S., M.D., 1.

Society of Apothecaries of London, 1.

State of Connecticut, 1.

Sherperd, F. J., M.D., 82.

Smithsonian Institution, 3.

St. Francis Hospital, 1.

University College, London, 1.

University College, Bristol, 1.

United States Dept. of Agriculture, 29.

University of Vermont and State Agricultural College, 4.

## Proceedings of the McGill Medical Society of Undergraduates.

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The McGill Medical Society held its first meeting of the session 1901-02, on Friday, October 18th, when it entered on the twenty-fifth year of its existence.

Judging by the number of the students present, the high class of the papers read, and the interest taken in the organization by the Honorary President and the professoriate in general, a most successful and prosperous year is in sight.

The officers for the year are:—

Hon. President—Dr. C. F. Martin.

President—R. C. Paterson, '02.

Vice-President—S. Evans, '92.

Secretary—S. St. J. McDonald, '03.

Treasurer—W. E. Nelson, '03.

The officers, realizing the mistake that has been made in past years of having the papers presented of such a character that they appealed only to senior men, and failed to interest the juniors, have so arranged their schedule for the present year that not more than one senior subject shall be presented at each meeting. The balance of the papers will deal with subjects of interest to all, such as the history of the various branches of medicine and of the allied sciences. Thus, it is hoped that for two nights at least in each month, the men will be lifted out of the rut of study, and have their attention called to that class of reading, which will tend to broaden their minds and make the study of medicine something more than mere cramming and working for examinations. By this arrangement, too, it is hoped to bring in the members of the first and second years, and, from the beginning, interest them in the work of the society, which the officers aim at making one of the best institutions of its kind not only in the University, but in Canada.

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### COCAINE ANALGESIA BY LUMBAR PUNCTURE.

BY

ROBT. C. PATERSON.

Ever since the earliest days of surgery, surgeons have been looking for some means by which the patient could be freed from the pain of the operation, primarily for the sake of the patient himself, and secondly so that the operation might be more skilfully and successfully performed, thus greatly increasing the chances of speedy and satisfactory recovery. Before the days of anæsthetics, the most brilliant and skilful surgeon was he who could operate most rapidly.

In those days surgery was not the complicated subject that it now

is, for as the patient was conscious and sensible of even the slightest pain, only the simplest operation could be performed.

Imagine the joy with which the world received the announcement that on October 16th, 1846, in the Massachusetts General Hospital, in Boston, Dr. Morton had employed ether, a liquid whose fumes had rendered a young man unconscious and insensible to pain while an operation for the removal of a lipoma from his neck, was being performed.

The recognition of the anæsthetic properties of chloroform soon followed, and these two rapidly gained in favor and popularity, until now the discovery of anæsthetics vies with that of antiseptics for first place among those discoveries that have done most to alleviate human sufferings.

The slight dangers and unpleasant after-effects, immediate and remote, of the general narcotics, have led investigators to seek some other means of abolishing or lessening pain, especially in minor operations.

The result was that in the early 80's, cocaine came to be used as a local anæsthetic. At first it was employed to anæsthetize mucous membranes by direct application to the surface; then subcutaneous injection was tried; later, Oberst used it by injecting it around or into large nerve trunks, thus rendering insensible to pain the parts supplied by these nerves.

Schleich then introduced his Infiltration Anæsthesia, by which considerable areas of the skin and muscles are made anæsthetic by infiltrating the tissues to the point of œdema with very dilute solutions of cocaine, the strengths of his three solutions, which are used for different purposes, being 1 in 500, 1 in 1,000 and 1 in 10,000.

Lastly has come into use the method with which this paper has more particularly to deal, namely the injection of cocaine directly into the spinal canal.

There seems but little doubt that this method was first discovered by Dr. Leonard Corning, of New York, who published in 1885, (*N. Y. Med. Journal*, October 31, 1885) the results of his experiments with the spinal injection of cocaine, first on a dog and then on one of his patients. He did not, however, think it necessary to penetrate the spinal membranes, but thought that the blood vessels would carry the drug to the nervous structure.

He also, a couple of years later suggested that painful diseases of the spinal cord could be treated in this manner (*N. Y. Med. Rec.*, March 17, 1888). The next person to invade the spinal canal was Quinke of Kiel, who introduced what is now known as Quinke's Lumbar Puncture for diagnostic and therapeutic purposes.



It rested with Prof. August Bier, also of Kiel, to first utilize the analgesia produced by the introduction of cocaine into the spinal canal for surgical purposes. His first operation under this form of anæsthesia was performed on August 16th, 1898, on a man æt. 34, with a tuberculous ankle joint (*Deutsches Zeit. f. Chir.* Band LI., p. 361.) Shortly after, he and his assistant, Dr. Hildebrandt, cocainized each other so as to be able to give a scientific statement of the resulting phenomena.

Next Seldowitsch (*Centrallblatt f. Chir.*, October 14, 1899) reported four cases of operation on the lower extremities in which he had used this method.

It was Tuffier, of Paris, however, who brought the method into prominence by reporting, at the 13th International Medical Congress at Paris, in 1900, 125 cases operated on, and practically demonstrating the method to the visitors at that congress. Since then many surgeons in Europe and America have experimented, some with greater and some with less success. The method is not difficult, and as that used by Tuffier is the basis of all operators, I will quote from his article (*La Semaine Médicale*, May 16, 1900) "A syringe that can be completely sterilized is used. The needle must be sufficiently long to penetrate easily the space between the skin and the subarachnoid space. This interval varies in length according to the obesity and muscular development of the patient. The needle should be of platinum. It must be easily sterilized, and about 9 cm. long. External diameter, 1 mm., internal, 8 mm. It must be firm, so as not to bend when it comes in contact with the vertebral column. Its end must have a short bevel. I employ a 2 per cent. solution of cocaine. This solution must be sterile and recent; old solutions must be discarded. This is important. I prepare my solution as follows:—The solution is exposed to a temperature of 80°C. in a water bath for 15 minutes; then it is kept at a temperature of 38°C. for 3 hours. This operation is repeated 5 or 6 times in succession. It assures a perfect sterilization, and the analgesic properties of the cocaine are not altered. The operative technique is as follows:—

"The patient is in the sitting posture, both arms being carried forwards. The field of injection is thoroughly asepticized. Locate the iliac crests. An imaginary line connecting these two passes through the fourth lumbar vertebra. By injecting beneath that line you penetrate the medullary canal. As soon as you have located with the left index finger this process, tell the patient to bend forward. Then it is always wise to tell the patient, "I am going to stick you with a needle; you will feel some pain, but do not move."

"Make the injection with the right hand. I insert the needle to the

right of the spinous process, about 1 cm. The needle goes through the skin, the subcutaneous tissue, the lumbar aponeurosis, the muscles of the sacro-lumbar region and penetrates the spinal canal. As soon as the needle is in the subarachnoid space it meets no resistance, and from it escapes, drop by drop, a clear yellowish fluid, the cerebro-spinal fluid. The surgeon must never inject the cocaine before he has seen this escape from the needle. After he has seen this, he attaches to the needle a syringe containing 1 cc. of the cocaine solution. The injection is made slowly; it should never be completed in less than 1 minute."

The technique has been modified in some of its details by different surgeons. Some prefer glass syringes, others those made of metal. The needles used are variously made of platinum or steel, and by one man an alloy of gold is employed. The solutions injected may also vary in their preparation and methods of sterilization, but all agree that the cocaine solution must not be heated above 80°C., as above that temperature its analgesic properties are destroyed. Rudolph Matas, of New Orleans, adds 1-40 gr. morphine to each dose, and says it acts as a sedative. (*Phil. Med. Journal*, November 3, 1900.)

All operators insist that the back must be as carefully sterilized as is the field of operation, for there is danger of infecting the spinal canal unless this precaution be taken. The results following the injection are about the same in each case, and, as the notes of Hildebrandt's case are probably as correctly and fully taken as possible, I will give Bier's report of this case. Bier's own case was a failure owing to the great loss of cerebro-spinal fluid through a mis-fitting syringe, and also by a probable leaking of the cocaine there was no analgesia produced. He thus describes Hildebrandt's case (*Deutsches Zeit. f. Chir.*, Band LI., p. 361) "I introduced in the usual manner the needle under Schleich's anæsthesia. This was felt as a pressure, not as a pain. At 7.38 p.m. I injected  $\frac{1}{2}$  cm. of a 1 per cent. solution of cocaine. He had a feeling of warmth in both legs. Pulse, 75. After 7 minutes, pricks with a needle were felt in the upper thigh as a pressure and tickling the sole of the foot was scarcely felt at all. After 8 minutes, cutting the skin of the upper thigh was felt as pressure, and drawing a blunt and crooked needle deeply through the fleshy part was not felt at all as a pain. After 10 minutes, a large needle with a handle was pushed down to the femur without causing the least pain. Hard pinching of the skin and squeezing with forceps was felt only as pressure. After 11 minutes, in the arm the sense of pain was greatly diminished. After 13 minutes, a burning cigar was felt as heat, but not as pain; ether produced a feeling of cold. After 15 minutes, tickling of the sole of the foot was felt only as a touch.

Pinching the leg was felt as slight pressure, in the upper part of the chest as severe pain. After 18 minutes, from the nipples down, pinching was scarcely felt any more. After 20 minutes, pulling out the hairs of the pupenda was felt as raising the skin, but the breast hairs above the nipple as severe pain. Extreme bending of the toes was not unpleasant. After 23 minutes, a knock with a hammer against the shin does not hurt. After 25 minutes, hard pressing and pulling of the testicles was not painful. In 40 minutes, profuse perspiration broke out all over the body. After 45 minutes, the sense of pain commenced to return and gradually became normal. The pulse, which had been 75 at the beginning of the experiment, fluctuated between 72 and 75. During the whole experiment the feeling of touch was never lost. The knee jerks were likewise retained."

Both Hildebrandt and Bier ate dinner after the experiment, and drank wine and smoked cigars. Shortly after, severe headache set in, accompanied by dizziness, and these lasted for several days. Bier kept to his bed for nine days, but Hildebrandt was able to attend to his work, going to bed only for half of the day following the injection. However, he was unwell for two or three days and felt weak for a couple of weeks after.

From this account you can see that it is only the sensation of pain that is lost. Touch, the perception of heat and cold, and motion are all retained. The general effects of such an injection may be nausea, vomiting, dizziness, headache, profuse perspiration, chilly sensation or actual chills, some rise in temperature, not accounted for by the surgical operation itself, some respiratory disturbance and involuntary evacuation of the bowels. Of course, all these are not seen as a rule in any one case, but there are few, if any, who escape without one or more. The most common and annoying symptom is the headache, which is of a very severe character, and lasts usually 12 to 24 hours. This may be partially relieved by the use of the bromides, hyoscine hydrobromide, nitroglycerine or caffeine, and the coal tar derivatives.

Several theories as to the cause of these symptoms have been advanced, but so far no one has been proved to be correct. They may result, and some probably do, from the poisonous action of the cocaine itself. On the other hand, it may be from an alteration in the pressure of the cerebro-spinal fluid in the canal and in the ventricles of the brain. Others say that the mere introduction of a foreign substance into the spinal canal causes this series of symptoms. It is true that the introduction of normal saline and solutions of other drugs cause similar symptoms of nausea, headache and vertigo. S. Ormond Gordan, of New York (*Phil. Med. Journal*, November 3, '00), reports that in one case where he dissolved the cocaine in cerebro-spinal fluid ob-



tained from the patient no symptoms whatever occurred; these facts would seem to show that alteration in pressure, and the introduction of a fluid of different specific gravity are the causative factors.

I have been able to collect reports of 173 cases, operated on under this form of anæsthesia by different surgeons and under almost all conditions possible. The results I have roughly summarized as follows:—

In 10 cases, no analgesia was produced; severe headache was reported in 79; nausea in 71; vomiting in 74; involuntary defæcation occurred in 9 cases, and urination in 4; profuse perspiration, 26 times; rise in temperature of two or more degrees, 55 cases; 12 patients had chills, and I showed distinct signs of collapse.

A. W. Morton, of San Francisco, states (*American Med.*, August 3, 1901) that by injecting the solution as rapidly as possible the analgesia may be extended to all parts of the body, and reports 8 cases in support of this statement. The following is an example:—

Male, æt. 62, Carcinoma of tongue. Injected rapidly 20 m. 2 per cent. cocaine into third lumbar space. Analgesia complete in 5 minutes. Lingual arteries ligated; the glands in the neck, and the entire tongue removed. Operation lasted 2 hours. No after effects and recovery uninterrupted.

A similar fact was noted by Brainbridge, of New York, but not with intention of producing general analgesia. In his case, a girl æt. 11, the conjunctivæ, mouth, tongue and posterior pharyngeal wall were tested, and found insensible to pain (*Med. News*, May 4, 1901, Case IX.)

Let us now look at the dangers or disadvantages and the advantages of this method over others. There is always a certain amount of danger from infection of the canal, causing a septic meningitis, a disease from which cases of recovery are very doubtful. Of course, rigid aseptic precautions render this danger almost nil, but the difficulty of completely sterilizing the patient's skin, and the ease with which the puncture is made, make it in the hands of a person who is not excessively strict, a very real danger. Another drawback is one which applies to lumbar puncture in general, and that is the ill effects produced by interference with the pressure, and with the contents of the cerebro-spinal canal.

In the majority of individuals there seem to be no effects from the aspiration of a few drops of liquor cerebro-spinalis, nevertheless Gumprecht (*Deutsche Med. Woch.*, XXVI., June 14, 1900) has collected 17 cases of lumbar puncture for diagnostic purposes, in which death followed quickly after the puncture, and in which the fatal termination could be attributed to no other cause than this trivial operation. Another danger lies in the analgesic drug itself. In the cases of which I



have examined reports, no deaths could be attributed to the cocaine, although in one or two there were alarming symptoms.

Goldan, of New York, reports the following case (*Phil. Med. Journal*, November 3, 1900), Mrs. L., in labour. Normal presentation. Analgesia to buttocks shortly after puncture. There soon followed vomiting, retching, profuse perspiration, dry mouth and muscular tremors. Pulse rose to 140, respirations to 60. She had every symptom of shock for about 10 minutes. After the placenta was delivered she went into collapse, was blanched and pulse imperceptible. She was inverted, and a hot saline enema given, after which she gradually improved. For two days she had severe headache, which was not relieved by medication.

Hopkins, of Brooklyn, reports another case (*Phil. Med. Journal*, November 3, 1900) in which there was no analgesia produced by the cocaine, and ether was administered, but had to be stopped owing to the condition of the patient. Pulse, 160, respiration feeble, pupils dilated, tremulousness of body and vomiting. At times the heart almost stopped. Three pints of saline solution were injected into the brachial vein, and two pints into the rectum. Strychnine and nitroglycerine were given hypodermically. It took six hours work to bring the patient around, and for ten days she had frequent sinking spells with general depression.

Carrière and Vanverts report a case in which no analgesia was produced, but toxic symptoms with violent headache, vertigo and vomiting came on, gradually disappearing in ten days (*L'Echo Med. du Nord*, May 19, 1901) W. G. Macdonald, of Albany, N.Y., gives the following report (*Med. Rec.*, December 1, 1900.) Patient a hard drinker. Under cocaine became cyanotic, profuse cold perspiration, respiration 60 to 80, pupils dilated, no pulse at wrist, involuntary evacuations. Recovery after two hours. One out of the first 125 cases reported by Tuffier, died with symptoms of asphyxia.

Racoviceanu-Pitesci, of Bucharest, says that three of his cases, out of 125, showed signs of intoxication that endangered life, and that necessitated artificial respiration and subcutaneous injections of ether, and that he knows of two deaths in Roumania following the lumbar injection of cocaine (*La Semaine Médicale*, August 8, 1900.)

It is well known that some people have an idiosyncrasy for cocaine, and it is impossible to tell who those people are before using it, so that what is a sufficient dose to produce a safe analgesia in one person is enough to endanger another's life. Many dangerous symptoms, and some deaths have occurred from the subcutaneous injection of cocaine. Another fact to remember is that when once the cocaine is

injected into the spinal canal, it is out of our reach and cannot be withdrawn if toxic symptoms develop.

The action of the cocaine is not constant, and in some cases there is no analgesia produced.

E. H. Gradin, of New York, (*Med. Rec.*, December 22, 1900) reports two failures after fluid was obtained through the needle. His solutions were tested and found active. In ten of the above mentioned cases no analgesia appeared. This, of course, is a minor disadvantage, as Tuffier claims that there is no contra-indication to the use of ether or chloroform in such cases.

A rather interesting case is given by Laplace, of Philadelphia, (*Phil. Med. Journal*, November 3, 1900) in which spinal fluid could not be obtained, 12 punctures being made, although the spinal cord was certainly reached the last time, as the patient in his own words experienced "a terrific electric shock."

Another objection which may be purely theoretical is the danger of permanent nerve lesions from the cocaine or from touching the cord or nerves.

Nicoletti, of Naples, (*La Semaine Med.*, August 8, 1900) experimented with dogs and rabbits, and found no histo-pathological changes in the cord, and Wm. Browning, Neurologist to the German and Brooklyn Hospitals, New York, examined 11 cases one week after injection with negative results.

It must be remembered, however, that nerve lesions are insidious, and may not appear for some time after the exciting cause has ceased to act. Corning himself says that he is not a surgeon, "but as a neurologist I tremble for the cord." (*Med. Rec.*, October 20, 1900.) On the other hand, Tuffier says that there are no dangers, immediate or remote, to the nervous system. (*Semaine Med.*, December 22, 1900.)

The unpleasant after effects, especially the headache, are a decided drawback to the method, and are admitted by most surgeons to be at least as unpleasant as those induced by chloroform or ether.

One fact, that some claim as an advantage, and others as a disadvantage is the consciousness of the patient. To a person unaccustomed to operations, the operating room, the instruments and the sight of blood, it must be a severe nervous strain to know what is going on, and so true is this, that many operators insist on having the eyes of the patient blindfolded, and his ears stuffed with cotton. Of course, it is of advantage to be able to consult the patient if any change is necessitated by the condition of things found, and have his or her consent before going further. The following is a case in point:—W. W. Keen, of Philadelphia, being the surgeon. (*Phil. Med. Journal*, November 3, 1900.)

Man, æt. 51. Large left sided scrotal hernia of 23 years standing distending the scrotum nearly to the knee. It was reducible, but when reduced caused discomfort in breathing. Eucaïne anæsthesia, Bassini operation performed. Keen did not want to use general narcosis on account of the embarrassment caused by the reduction of the hernia, and which might have gone so far as to endanger life were the patient unconscious. If he were conscious of the discomfort he could have told of it, and had the hernia re-established before dangerous symptoms developed.

In many cases the patient can aid the surgeon by holding himself in the position most convenient for the carrying out of the operation, whereas, if unconscious he has to be literally bolstered into the position desired. In one case reported, that of an amputation of the thigh, the patient held up the stump, while the surgeon treated the bleeding vessels.

The fact that the muscles retain their tonus must be a disadvantage, especially in abdominal work. Under general narcosis, the muscles are relaxed and flaccid, but only become so after very large doses of cocaine. In abdominal operations the retching and vomiting are also likely to interfere with the operator.

Probably the chief advantage that this method can claim is that it does not have the same injurious effects on the heart, lungs and kidneys, as do the old anæsthetics. Many operators who have employed it go so far as to say that there are no contra-indications to its use. Thus, for example, cases of diabetic gangrene have been operated on without ill effects; others suffering from renal inflammations have been anæsthetized by cocaine and been none the worse. Even severe cardiac lesions, and cases of advanced pulmonary tuberculosis are not harmed by the injection or analgesia. As an example; you are called to see a man with a septic peritonitis or a strangulated hernia, but the patient also suffers from Bright's disease. This is a case of certain death without operative interference and almost as certain if chloroform or ether are administered. With cocaine the operation can be performed without further injury to the kidneys.

In the majority of cases there is not the same amount of depression as follows general narcosis, and there is less liability to shock, so that the patient leaves the table in a better condition, and is better prepared for convalescence. I have not been able to find any figures to show whether or not the convalescence is shorter or more satisfactory than under the old methods. Old persons are said to show no ill effects, and to stand cocaine better than chloroform.

Another fact greatly in favor of cocaine is the ease of its adminis-

tration, and the fact that once the patient is anæsthetized the operator can put all his attention on the operation, and does not have to watch the anæsthetic. It would thus be of great value where the physician is alone, and experimenters say that there is no reason why cocaine analgesia cannot be as well employed in private practice as in the hospitals. The expense saved would be considerable, as a physician's ether and chloroform bill, especially one who does much operating, is a very considerable item, and then, too, the services of an anæsthetist can be dispensed with.

What vomiting there is, the patient is conscious of, and there is not the danger that occurs in ether and chloroform narcosis of the trachea or larynx becoming blocked by the vomitus.

What is known as inhalation or ether pneumonia, is by the use of cocaine done away with, and thus another remote effect of the old anæsthetics removed.

Finally, there is the testimony of many patients who have been operated on under both ether and cocaine that the latter is much the less disagreeable of the two.

Summing up, then, the general consensus of opinion seems to be, as Bier says in his latest paper on this subject (*Centralblatt f. Chir.*, July 20, 1901), that it is at least as dangerous as the general narcotics, and perhaps even more so, and in its results even more unpleasant. And, again, that spinal analgesia is not yet perfected, and needs improving and further investigation, before being generally adopted. Nevertheless, he believes that it has a future. Tuffier, perhaps its strongest advocate, says (*Semaine Med.*, December 12, 1900.) Analgesia by this means bears comparison with general anæsthesia. Whether it should replace it, the future will show.

Phelps, of New York, (*Phil. Med. Journal*, November 3, 1900) admonishes the profession to advance with great caution, and says that only when it can be shown that death from this form of anæsthesia is less than 1 in 75,000, will we be justified in abandoning ether for cocaine.

He also states as his opinion, that if a 2 per cent. solution of cocaine were injected into the spinal canals of 1,000 persons, taken indiscriminately, the mortality would be greater than 1 per cent.

In some cases there can be no doubt but that it is indicated, as in operable cases, where ether and chloroform are absolutely contra-indicated.

An editorial in the *Medical News* for October 13, 1900, says that it should be our object, not to employ medullary narcosis as first described, but using this as our starting point, to take means to render it harmless and to extend its action to all parts of the body.



For the present we must regard it not as an accepted fact, but as something still in its chrysalis stage.

#### MCGILL MEDICAL SOCIETY OF UNDERGRADUATES.

The first meeting of the society for the present session was held in No. III. lecture theatre, on October 18, 1901, at 8 p.m., the President, R. C. Paterson in the chair.

After routine business had been disposed of, the first paper of the evening, "Lumbar Puncture Anæsthesia" was read by Mr. R. C. Paterson, '02. The advantages and disadvantages of this method of anæsthesia was discussed in an able manner.

The second paper was entitled, "Primitive Medicine," read by F. E. Stowell, '03, and was well received.

The Honorary President, Dr. C. F. Martin, then delivered an address illustrated by stereoptican views on the Continental Schools and Men who have been Prominent in Medical Science.

The second regular meeting was held in No. III. lecture theatre on the evening of November 1st, 1901, President Paterson in the chair.

A very interesting and instructive paper on "The History of Syphilis" was read by W. A. Gardner, '02, and one on Hypnotism, by N. W. Strong.

Professor Wesley Mills then gave a demonstration on the Nervous System, treating his subject in such a manner that not only those who had already finished their course in physiology, but the students of the freshmen year were equally able to profit by it.

#### OUR GRADUATES.

C. B. Trites, Med., '99, is located at Liverpool, N.S., where he has succeeded in building up a very lucrative practice.

E. L. Robidoux, M.D., '01, has taken up practice in his native town, Shediac, N.B.

T. H. Lunney, M.D., '01, is Senior Resident Physician of the St. John General Hospital, St. John, N.B., and has for his assistant, T. F. Bayfield, M.D., '01.

J. E. Carnath, M.D., '00, is practicing at his home, Riverside, N.B., and has already won some fame as a surgeon.

H. W. Coates, M.D., '00, who upheld McGill's prowess on campus and battlefield is now practicing his profession at Alma, N.B.

H. A. Jones, M.D., '00, is practicing at Sydney, Cape Breton, and meeting with success.

F. J. White, M.D., '86, after practicing for a number of years at Shediac, N.B., has removed to Moncton. Dr. White is an enthusiast in militia matters and has attained the rank of Surgeon-Captain.

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A DISCUSSION OF THE RELATION BETWEEN HUMAN AND  
BOVINE TUBERCULOSIS, WITH SPECIAL REFERENCE  
TO PRIMARY INFECTION IN CHILDREN THROUGH  
THE ALIMENTARY TRACT.\*

BY

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Until two months ago the presence of the tubercle bacilli in milk has been regarded by the profession in all countries as a possible source of much danger, and although some recent writers have stated that in their experience the danger was but a nominal one, yet in all the more important countries in Europe, the profession has deemed it wise to obtain authoritative pronouncements from their several governments, and legal enactments have been passed to guard the public against what has been declared to be a very serious menace to its health. Nevertheless, at the recent Tuberculosis Congress in London, Koch made the startling statement that the infection of human beings by bovine bacilli is but of rare occurrence; cases in which the disease has been conveyed by the milk or meat of tuberculosis cattle, or by butter made from such milk, are not in his opinion more frequently met with than are cases of hereditary transmission, and therefore the danger arising from this source may be practically disregarded.

By this statement he condemns as useless the precautions which have been declared to be necessary by every Board of Health, and which have been re-emphasized by all of us in our own professional circles.

When asked by Professor Rotch a few weeks ago to read a short

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\* Read before the Suffolk District Medical Society, Boston, October 26, 1901.

paper before this society I thought that it might not be without some interest to briefly review the facts which led up to this general belief in the possibility of primary infection through the intestinal tract by the bacilli in milk, hoping that in the discussion which might follow, the position to be taken by us as a medical profession at the present, might be more clearly defined.

In 1865 Villemin<sup>1</sup> excited the interest of the medical world by his statement that tuberculosis is a specific affection, the cause is an inoculable agent, inoculation of tuberculosis material into the rabbit producing tuberculosis. Chauveau,<sup>2</sup> following him, found that such material may be also effectively introduced into the body through the alimentary canal, and that calves might be rendered tubercular by feeding them with the milk, sputum, or flesh of an infected animal, a fact verified later by Gerlach,<sup>3</sup> Klebs, Orth and Bollinger.<sup>4</sup>

A few years afterwards experiments made by Baumgarten<sup>5</sup> showed that a few ounces of milk to which a quantity of phthisical sputum had been added, were sufficient to produce characteristic tubercular lesions in the intestine of the rabbit with considerable precision and certainty.

Wesener<sup>6</sup> found that when sputum was given with the food of rabbits, the mesenteric glands alone became infected, but when sputum was injected directly into the intestine, intestinal lesions of a virulent character ensued. This difference in the results Wesener attributed to the germicidal power of the gastric juice.

It was in 1882 that Koch discovered the tubercle bacillus and announced to the world that tuberculosis, whether human or bovine, was one disease and dependent in all cases upon the one specific micro-organism; a view questioned by Virchow and others who recognized even then that the contagium of bovine tuberculosis was much more virulent for experimental animals than that met with in human tuberculosis. Koch now maintains that human tuberculosis differs from bovine and cannot be transmitted to cattle, and adds that if one studies the older literature of the subject and collates the reports of the numerous experiments that were made in former times by Chauveau, Gunther, Bollinger, and others, who fed calves, swine, and goats with tuberculous material, one finds that the animals that were fed with the milk and pieces of the lungs of tuberculous cattle, always fell ill of tuberculosis, whereas those fed with human material did not.

Opposed to this view thus absolutely stated let me quote the following: In 1888, Crookshank<sup>7</sup> reported to the Board of Agriculture in England that he had inoculated an animal with sputum from a case of advanced phthisis, which evidently had contained besides tubercle bacilli suppurative micro-organisms, and stated that he had been able

to produce numerous tubercular nodules in the peritoneal cavity of a calf. The animal, however, rapidly succumbed to pyæmic poisoning. Evidently the development of tuberculosis had been greatly favored by the lowered vitality dependent upon the double infection.

In 1893 the following experiments on cattle were carried out by Professor Sydney Martin.<sup>8</sup> Six calves were fed on tuberculous sputum; two of them received each 440 cc. of human sputum containing bacilli in large numbers. One of these after 56 days was killed and was found to be suffering from tuberculosis of the intestine and mesenteric glands; the second was allowed to live for 138 days; when killed it was found to be quite free from tuberculosis. The four other calves received, mixed with their food and in one meal, 30 cc. of human sputum containing numerous bacilli. They were killed at intervals of 33, 63, 85, and 283 days from the commencement of the experiment. The first was slightly tuberculous, the second and third had distinct tubercular nodules in the intestine, whilst the fourth remained free from the disease. In similar experiments carried out with tubercular material of bovine origin the disease came on much more rapidly, and was more extensive. In his report, Martin writes, "It is evident we are dealing in the case of tuberculous sputum with material which is less infectious to calves than bovine tuberculous material, since in those calves fed with human sputum, not only did two not become infected at all, but the others only developed a local lesion of the intestines and mesenteric glands, while in those fed with bovine tubercular material the disease has spread from the intestines and mesenteric glands to the lymphatic glands of the thorax and to the lungs."

In this country important experimental investigations have also been carried on. Frothingham in 1897,<sup>9</sup> reported that he had inoculated calves in the peritoneum, in the trachea, and subcutaneously, with emulsions of tubercle bacilli from human sources, with the result that local nodules were produced. The following year Theobald Smith<sup>10</sup> also reported that as the result of his investigations he found that the tubercle bacilli from bovine sources had in culture fairly constant and persistent peculiarities of growth and morphology, and might to some extent be differentiated from the bacilli of human origin. There was also a marked difference in their pathogenic power. In 1899, Adami,<sup>11</sup> in summing up the evidence, wrote: "Cattle, if treated identically, and given equal quantities of growths of tubercle bacilli emanating from man and from cattle respectively, react to the two cultures differently. In the former only a localized and thus non-infectious disease is produced; in the latter a generalized and consequently infectious disease develops."



These conclusions, however important in themselves, were only on lines of thought and investigation along which pathologists in many countries were working. Strauss<sup>12</sup> and Gamaleia in 1891 had pointed out many differences in culture growth, and pathogenic power for other animals between avian and human bacilli, and for some years it had been generally recognized that although Koch's statement was true that the disease tuberculosis, whether appearing in man, cattle, swine, birds, etc., is dependent upon a micro-organism which has in all cases the same general morphological characteristics and staining reactions, yet as found in each class of animal the bacillus appears to have more or less well marked distinguishing characteristics. It would appear, however, that we have not to deal with absolutely different species, but rather with mere variations acquired by the bacillus in its passage through successive individuals of one species (Adami). Nocard and Roux<sup>13</sup> have shown that in the two forms regarded as most distinct, namely avian and human bacilli, one can by special methods of growth outside the body obtain eventually cultures of the two that are indistinguishable. They have also shown that by enclosing a culture of the human bacillus very carefully in a sterilized capsule of collodion, hermetically sealing this and placing it in the body of a bird, the bacilli thus protected continued to grow, nourished by the lymph which diffuses into the interior of the capsule; growing thus, the bacilli gradually assumed the characters of avian bacilli.

Thus it is shown that variations more or less pronounced may manifest themselves in bacilli by development in different kinds of animals, and it is generally considered that the passage of pathogenic germs through a series of animals of one species leads to those germs acquiring a maximum virulence for that species, and at the same time in many instances a marked diminution in virulence for certain other classes of animals.

An excellent clinical example, as Dr. Adami<sup>14</sup> has pointed out, of this modification of a micro-organism by its passage through a succession of animals of one species, is afforded by what is now definitely ascertained in regard to the contagium of smallpox and cow-pox. For many years it was held that cow-pox in the cow and smallpox in man were two absolutely distinct diseases, an opinion due in great measure to the extreme difficulty that was experienced in inoculating cattle with the virus of human smallpox. We now know they are the same for many observers have shown that if we take matter from a smallpox vesicle and inoculate it with care into calves we obtain, not a typical vesicular eruption, but a few hard papules only. If these are

broken up, however, and inoculated into a second calf, in that calf the result is more typical, and, by renewing the process, after three or four passages we obtain the development of a perfect vaccine vesicle. Lymph taken from this vesicle produces typical vaccinia, or smallpox with localized symptoms as opposed to the smallpox with generalized symptoms, that the original virus would have produced.

Considering these facts, I cannot avoid drawing the conclusion that the first part of Koch's statement that human tuberculosis differs from bovine and cannot be transmitted to cattle, is to be regarded as true only in a modified sense. Here let me also call attention to the fact that although there is much difficulty in inoculating the cow with smallpox virus, there is but little difficulty in inoculating man with cowpox virus. Is it not possible that a similar condition may exist in regard to the bovine tubercle bacillus? Permit me briefly to refer to the evidence pointing to the transmission of bovine tuberculosis to man. From the nature of the case we would expect proof to be difficult. Man is a cooking animal and direct experimentation is out of the question. Cases of accidental inoculation are all liable to be disqualified from our inability to exclude every other possible source of infection. A few, however, appear fairly trustworthy. Professor Jensen, of the Veterinary School of Copenhagen, was severely infected in his hand while performing autopsies on tuberculous cows, and was said to have been saved from general infection only by surgical removal of the lesion. Dr. Thomas Walley, of the Royal College of Edinburgh, was infected in a similar way, and death is said to have resulted from the infection. Ravenal<sup>15</sup> also reports three cases of infection in the same manner, in which, however, the general infection was prevented by removal of the primary lesion and adds that the value of such cases as he has reported in proving the virulence of the bovine bacillus for man, has been questioned on the ground that the lesions resulting from inoculation are usually slight and remain localised; the conclusion being forced that the bovine tubercle bacillus has little virulence for man. All observers, however, agree that the skin offers a very poor soil for the growth of tubercle bacillus as indicated by the slow evolution of skin lesions, and the small number of bacilli as a rule found in them. Chauveau failed entirely to infect calves by superficial scarifications and punctures even with the bovine bacillus, the nodules so formed often disappearing spontaneously; even the guinea pig, one of the most susceptible animals to the infection of tubercle bacillus resists invasion by the skin. Ravenal concludes that it is unfair to consider the local character of the lesions produced by superficial inoculation as an indication of lessened virulence for man.

He also quotes a case reported by Pfeiffer. A man of good family history, and in good health, was wounded in the thumb of the left hand when performing autopsies on tuberculous cattle, the point of a knife entering the articulation between the first and second phalanges. The wound healed without suppuration, but after six months a cutaneous tubercle formed about the scar, and the joint was attacked. The lungs became involved, and the man died eighteen months after the accident. At the autopsy the local lesion was found filled with a caseous mass extremely rich in bacilli.

These cases indicate at least the possibility of direct infection by bovine bacilli. They may also be regarded as an illustration of what has been observed in systemic infection by many forms of micro-organisms, that the amount of resistance offered to infection by an animal varies according to the special tissue attacked, while the possibility of infection is increased by the presence of an already existing lesion.

Shortly after Koch had demonstrated the presence in the tissues of the bacilli, other investigators found the same bacilli in the milk of cattle suffering from the disease. Nocard, Bang, Rabinowitsch, Petri, Ernst, and many others working in this field for many years, have established beyond doubt that true tubercle bacilli are found in considerable numbers in the milk of cows suffering from advanced tuberculosis or tubercular mastitis. They are also found occasionally in the milk of cows giving only slight clinical evidence of tuberculosis, but distinctly reacting to tuberculin. Butter also, frequently contains the tubercle bacilli, but meat comparatively seldom.

Experimental investigations following in the wake of these bacteriological researches proved undoubtedly, as had been stated before, that milk in which bacilli existed in sufficient numbers, was assuredly pathogenic for young animals, and led to general tubercular infection. It is to be noted, however, that the experiments of Adami and Martin at Outremont, near Montreal, corroborating those of observers in other countries, show that to prove pathogenic, even for young cattle, the bacilli must be moderately abundant in the milk. Four calves of healthy stock were tested with tuberculin previous to the commencement of the experiment. They were then kept in special stalls and fed with the milk from a tuberculous cow which had reacted to tuberculin, and in whose milk bacilli in small numbers were found. Tested six months afterwards all of them still failed to react to tuberculin.

Wyssokowicz insists that there is a minimum number of tubercle bacilli which must be inoculated into an animal in order to induce the disease. Two or three bacilli inoculated into the peritoneal cavity



of even a susceptible animal are destroyed. He found that more than fifteen must be inoculated into a guinea pig for the disease to be set up in that animal. It follows, therefore, that they must be introduced in considerable numbers into the alimentary tract before they can, even under favorable circumstances, give rise to general infection.

The consideration of those instances in which the infection is said to have been conveyed to human beings through milk even more than in the case of direct infection through a wound involves the possibility of error. Many instances have been published, but time permits me to refer to only one or two in which the evidence is fairly convincing in its character. Nocard<sup>8</sup> relates the following:—"Dr. Gosse, a well known medical man in Geneva, lost a daughter seventeen years old under the following circumstances: She had been in perfect health up to the year preceding her death, when symptoms of marasmus set in, which, in ten months terminated fatally. The autopsy revealed extensive tuberculous disease of the intestine and mesentery. Careful investigation revealed neither any family history or known personal exposure, but it appeared that every Sunday, Dr. Gosse and his family spent the day at a small estate on the hills where the young girl was in the habit of drinking freely of warm fresh milk. On testing the cows with tuberculin, four out of five on the estate were found to be tuberculous. They were killed, and in two of them tuberculous mastitis was discovered.

Brouardel<sup>19</sup> relates that in a small boarding school in Paris under his care, five of the pupils in one term contracted tuberculosis, the only origin for which that he could discover was the milk of a cow afterwards found to be suffering from tuberculous mastitis, and of which these pupils had drunk freely. Marfan, Olivier and Denune relate similar cases.

As the result of the evidence afforded by experimental researches in animals, and the publication of instances similar to the above, milk was then regarded by the profession as a possible source of tubercular infection, especially in the case of infants and young children, and a committee appointed by the British Medical Association reported in 1895<sup>20</sup> that the mortality from tuberculosis in early childhood was not decreasing in the United Kingdom to the same extent as the death rate from this disease at other ages, and "the opinion that this great prevalence of the disease in childhood is due to infection through the alimentary canal by milk from tuberculous cows, appears to be well founded."

The attention of pathologists was now directed to the paths by which the bacilli effected an entrance into the body, but with the in-



investigation of the seat of the primary lesion doubt was thrown upon the view that infection by milk was the great cause for the tuberculosis of early infancy. The detection of the primary lesion is in many cases difficult, and the result of the post mortem findings have to be read with some caution. In general we are guided by the fact that the lymphatic glands in childhood form a delicate index of the extent and duration of the tuberculous infection in the organs to which they correspond. Their condition is to be regarded as more important in the determination of the duration of the lesion than the condition of the organ itself, or the sequence of clinical symptoms.

One of the first to investigate the pathway of infection in children, was Northrup<sup>21</sup> of New York, who, in 1891, in a paper read before the Academy of Medicine, presented the statistics of the New York Foundling Asylum, which emphasized the fact that in the great majority of cases of tuberculosis in children, the seat of primary infection was in the lymph nodes clustered about the bifurcation of the trachea, and the root of the lungs. In 125 autopsies on tubercular children, he found 88 cases of primary infection through the respiratory tract, 3 apparently of primary infection through the intestinal tract, and 34 in which the seat of the lesion was unable to be determined. He explains these last as cases in which the ravages were so extensive that the seat of primary infection was not clear; "the bronchial nodes were large and cheesy; likewise the mesenteric; the lungs contained tubercles, so did the liver, spleen, kidneys and meninges."

Holt,<sup>22</sup> reporting in 1896 a series of 119 autopsies on tubercular children, stated that he found the intestines involved in forty cases and the mesenteric lymph nodes in 38 of these, but in his opinion primary infection of the alimentary tract was extremely rare. He adds:—"In the series of autopsies above given there was not one in which a careful study of the lesions made it at all probable that the seat of the primary infection was either in the stomach or intestines, while in 63 of the cases the intestines were not infected at all. In those cases where the stomach and intestines were the seat of tuberculous disease, with very few exceptions the disease was only slightly marked in that locality, although very advanced in the lungs and bronchial lymph nodes."

In 1899 Bovaird,<sup>23</sup> of New York, brought up to that date the records of the New York Foundling Asylum, giving the details of 75 additional post mortems to those previously reported by Northrup. In 60 of his cases the primary lesion was found either in the lungs or bronchial glands; in 8 the lesions of the bronchial and mesenteric

glands were so nearly alike that the question of priority could not be determined, and in 7 the records were incomplete.

English pathologists, while acknowledging the great frequency with which infection apparently enters through the respiratory tract, all unite in stating that in from 25—30 per cent. of their cases the primary lesion is connected with the intestinal tract. Colman<sup>24</sup> in 1893 published the details of a series of 60 cases occurring during a year's work in the post mortem rooms of the Hospital for Sick Children, Great Ormond street, London, and stated that as the result of his investigations, while not doubting an infection by milk in some cases, he attached more importance to infection through the thoracic glands as the tuberculous process was more advanced in them as a rule than in the mesenteric glands.

In 1894 J. Walter Carr<sup>25</sup> published the following record from the post mortem room of the Victoria Hospital for Children:—Out of 120 autopsies on tubercular children, he met with four in whom the disease was very generalized, and the infective lesion was not discovered; 79 cases in which the primary lesion was in the lungs or bronchial lymphatic glands; 20 cases in which the primary lesion was in the intestines or mesenteric glands, and 6 in which it was difficult to state which of these two systems was the earlier infected; in 11 the caseous centres were numerous, and it was impossible to say which was the primary one.

Dr. Guthrie in 1899,<sup>26</sup> tabulating the post mortem records of the Children's Hospital, Paddington Green, for the previous eight years stated that out of 77 cases dying of tubercular disease, he found 42 cases in which the primary lesion had been apparently in the respiratory tract; in 19 he met with it in the intestinal tract; in 7 both tracts were equally affected, and in 9 the origin was uncertain.

Dr. Still,<sup>27</sup> of Great Ormond street, in a very interesting paper gives us the following statistics:—

|                        |     |                  |
|------------------------|-----|------------------|
| Lung.....              | 105 | } 136<br>153=57% |
| Probably Lungs.. . .   | 33  |                  |
| Ear.....               | 9   |                  |
| Probably Ear.....      | 6   |                  |
| Intestine.....         | 53  | } 63 =23%        |
| Probably Intestine.... | 10  |                  |
| Bones, &c.....         | 5   | } 53=nearly 20%  |
| Fauces.....            | 2   |                  |
| Uncertain.....         | 46  |                  |

While many German pathologists state that in their experience the primary lesion is almost never found in the intestinal tract, a few have met with it in a small percentage of their cases. Spengler<sup>28</sup> quotes the records of 92 cases in which the intestinal tract was alone involved in four.

Kossel,<sup>29</sup> of Berlin, discussing the statistics of 286 consecutive autopsies on children, of whom 22 had died of tuberculosis, met with only one, an infant nine months of age, in which the infection was confined to the intestinal tract.

French statistics corroborate to some extent the English. Marfan,<sup>30</sup> writing in 1899, says: "Tuberculosis by ingestion is certainly rarer than tuberculosis by inhalation. . . . Alimentary tuberculosis is met with especially between the ages of one and five years, and accounts for about eight per cent. of the cases of tubercular infection observed at this period of life. These are the figures given by McFaydean and Woodhead, and they accord with those I have observed myself." Comby<sup>31</sup> writes, "Children become tuberculous through the respiratory tract."

A very interesting class of statistics are those cases of latent tuberculosis in children who die of disease other than tuberculosis, and in whom the presence of tuberculous lesions has frequently not been recognized during life. Still<sup>32</sup> speaks of 43 cases dying of other diseases in whom the primary focus of infection was easily determined on account of the comparatively early period at which they were enabled to make the examination, and the local character of the infection. Of these the primary lesion was found in the respiratory tract in 26 cases, in the intestinal tract in 16 cases, and in the ear in 1 case.

Kossel,<sup>33</sup> in his series just referred to, met with tuberculous lesions in 14 children who died from other disease, and who, during life had not been recognized as suffering from tuberculosis. Of these 14 latent cases, in 10 the bronchial glands, and in 4 the mesenteric glands were infected.

To interpret these records aright we must recognize:—

1st. The peculiar susceptibility of pulmonary tissue to the growth and development of the tubercle bacilli.

2nd. That generalisation of the infection is a striking feature of tuberculosis in childhood, due probably to the activity of the lymphatic circulation in the child. It may, however, be also an indication of virulence in the infecting bacilli.

3rd. That tubercle bacilli, gaining access to the body through the intestines, may be readily conveyed from the lacteal ducts by the



lymph stream through the thoracic duct into the right side of the heart, and thence directly into the lungs.

4th. With our present knowledge of the distribution of the bacilli from human sources it is extremely probable considering the way children are allowed to creep upon the floor, and the tendency they have to put everything into their mouth, that bacilli may frequently be introduced on their fingers or on their playthings. It is also probable that much more frequently than the germs of typhoid fever human bacilli may be introduced with the food. The ingestion of bovine bacilli conveyed in milk is, therefore, by no means the only source of intestinal infection we have to reckon with.

From these statistics, however, we must conclude, that in the past the general profession has unquestionably exaggerated the danger of infection from ordinary milk. We have been misled perhaps by the frequency with which bacilli have been reported to exist in milk, for many investigators have mistaken other acid-fast bacilli found both in milk and in butter for true tubercle bacilli.

We have also been unduly afraid of a few bacilli in otherwise normal milk. Holt<sup>34</sup> is undoubtedly right when he says, "Unless the udder is the seat of disease, the number of bacilli contained in cow's milk is so small that infection from this source can hardly be considered as anything more than a possibility. There is little doubt that tubercle bacilli in small numbers may be introduced into the stomach with the food almost with impunity, traverse the intestinal tract and be discharged without ever attaching themselves to its mucous membrane.

The mixing of the milk from the whole herd also lessens the number of bacilli in any given quantity of the milk. At least it is probable that it does so in America, for tuberculosis in cattle does not exist to anything like the extent it does in England and in many European countries.

It is also to be remembered that tubercle bacilli do not develop in milk under ordinary circumstances as many other micro-organisms do, and that if they are not actually destroyed their virulence is at least inhibited by the many modes in which the milk is prepared for the child.

Although contrary to our experience in America, careful and recent records like those of Still, demand much consideration. It may be regarded as some explanation of the difference between his statistics and those of Northrup, Holt and Bovaird in America to point to the much greater frequency of tuberculosis in the cattle in Eng-



land, and the fact that the children attending the English hospitals whose records we have quoted, are children drawn almost entirely from the congested central districts of London. As one writer says, "They are children that rarely see more than the four walls of their home." American children have more fresh air at home, and to a much greater degree are they taken out into the country. These children are, therefore, pre-eminently children of low vitality, and Crookshank's experiment in which his unwittingly introduced pyæmic bacteria increased greatly the virulence of the human bacilli and led to systemic infection of the cow, may assist us in understanding the frequency of intestinal infection in them. This thought is also corroborated by the greatly increased frequency with which tuberculous affections are met with in infancy and early childhood in London and the continent, to what they are with us in America. Holt refers to this, and certainly in Montreal tuberculosis in early infancy is very rarely seen. We have also very little tuberculosis in cattle.

In this connection we may ask the question, do those cases in which the mesenteric glands are alone affected, represent truthfully all the possibilities of infection through the intestinal tract and by food? Does not Koch himself give us another suggestion, perhaps somewhat unwittingly, when describing the post mortem findings in animals who had eaten the bacilli of bovine tuberculosis, he says, "These animals had without exception severe tubercular disease, especially tuberculous infiltration of the greatly enlarged glands of the neck and of the mesenteric glands, and also extensive tuberculosis of the lungs and spleen." With such rapid generalisation occurring in a tuberculosis of only three months standing, namely, from the administration of the infected food to the killing of the animal, may we not find an explanation of some of those cases rejected by Dr. Northrup when he says, "34 cases were indeterminate; cases in which the ravages were so extensive that the seat of primary infection was not clear; the bronchial lobes were enlarged and cheesy, likewise the mesenteric; the lungs contained tubercles, so did the liver, spleen, kidneys and meninges."

Leonard Pearson has also recently shown by many feeding experiments under the auspices of the Pennsylvania State Live Stock Sanitary Board, that animals fed with tuberculous material may develop pulmonary tuberculosis, and in some instances fail to show lesions in any other organ.

A clinician on these matters must speak with some diffidence, but from these statements and others, it would appear probable that in a certain percentage of those cases in which the respiratory tract is

involved, the infection may have been originally conveyed in the food, but it also follows that the bacilli in these cases were of a virulent character. When discussing these points with Dr. Adami one evening he suggested that it was perhaps possible to differentiate in childhood, two types of the disease, one of human origin, the other perhaps from bacilli of bovine origin. He has kindly favored me with his views in writing, as follows:—

“I might point out what very possibly has been pointed out by others, though if so I have not noticed any reference to such a statement, that, more especially in the young, we meet with two types of tuberculosis—the rapidly, and the slowly progressive forms. Concerning the former I need say little; it corresponds to the fatal tuberculosis of early adult life save in this, that it appears apt to be still more rapid, to generalise simply, and to end in acute miliary tuberculosis, or tubercular meningitis; its very rapidity indicating that the young are even more susceptible to virulent tuberculosis than are adults. It is to the slowly progressive form, however, that I would especially draw your attention—the form which shows itself as scrofulous lymphatic glands and tubercular peritonitis—a peritonitis often so mild that it can be cured by inunctions of mercurial ointment and other drugs setting up a mild irritative process. I remember how I used to be struck by these cases when a house physician years ago. Here is something very different from ordinary tuberculosis, and our general conceptions of the disease.

One explanation of this slowly progressing form, which immediately presents itself, is that the progress of the disease is dependent upon the powers of resistance on the part of the organism and of the attacked tissues, and that in these slowly progressing cases we are dealing with the development of tuberculosis in those relatively insusceptible. But on consideration not a little is to be said against this view. For, granting, as all will I think grant, that with advancing age—and especially after early adult life—there is a progressive insusceptibility to the disease, then, were this reason correct, we ought to meet with this slow form most frequently between the ages of twenty-five and forty. It is just at this period that we do not come across it to any extent.

Another explanation appears more probable; namely that the relative rapidity of the systemic infection in different individuals is not due to a variation in tissue susceptibility so much as to a variation in the pathogenic properties of the bacilli. It is especially at the milk drinking period of life, and in connection with the alimentary tract that this milder form manifests itself (for infection of the cervical

lymphatics would seem secondary to infection from the mouth, tonsils, etc., and tubercular peritonitis is evidently closely associated with the intestines.) Is it not, therefore, possible that infection with bovine tubercle bacilli leads in the first place to the production of this relatively mild form of tuberculosis, while the more acutely progressive form is due to bacilli which by passage through a series of human beings have acquired heightened virulence for man? I do but suggest this tentatively; to prove it, or seek to prove it, requires careful study of a full series of cases.

That this mild form at times culminates in acute miliary tuberculosis, is freely admitted, but this after all is what is to be expected. As Nocard's observations upon avian bacilli fully demonstrated, after long continuance in the body of birds, the ordinary (human) tubercle bacilli acquire for birds the character and virulence of avian tubercle bacilli, so, long continuance in the human body would eventually modify bovine bacilli—they would acquire increased proliferative powers and toxicity against the human tissues."

Associated with these suggestions of Adami may I briefly refer to the investigations of Kossel,<sup>35</sup> who, in a series of 63 children from one to ten years of age, hospital out-patients, tested with tuberculin found that out of these 63, 28 gave the reaction. He was not content with one typical reaction but in all cases he insisted on having two. Of these 28, in 24 no physical signs were found. Kossel believed that two-thirds of these cases of latent tuberculosis were cases of involvement of the bronchial or mesenteric glands, the other third he considered represented involvement of the cervical glands, bones, etc. He believed that these 28 cases, or 40 per cent. were nearer the truth as a representation of ailing children affected with tuberculosis than the 12 per cent. he found at autopsies. "Jederman hat ein bisschen tuberculose."

Hitherto we have given all the credit to the improved health and environment of the patient in withstanding the attack of the bacillus; perhaps in some cases the source from which the microbe originally came has also much to do with the result. In this somewhat hurried resume, I have endeavored to place before you, the more important facts, thus far ascertained, which have a bearing on this very interesting question. The more one considers them, the more is one convinced that much clinical and bacteriological work still remains to be accomplished before these latest statements of Koch can be either accepted or contradicted absolutely.

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## THE ADMINISTRATION OF THE CIVIC HEALTH DEPARTMENT.

BY

J. E. LABERGE, M.D.

As you are aware, the Montreal Health Department has been completely reorganized. It was thought proper in order to facilitate the working of the Department to divide it into four sub-departments, which remain under the control and enlightened direction of the Medical Health Officer, Dr. Louis Laberge. I have been appointed head of the sub-department concerned in combatting contagious diseases. Counting upon by your co-operation and support in the arduous task of directing this department, I accepted the position. The responsibility that falls upon me is great and the means that we have at our disposal to effectively combat contagious diseases is very small. However, with the assistance of the profession I venture to hope that the work can be carried out with happy results, without a great deal of difficulty.

It is with this hope that authorized by the chairman and our Chief Physician, Dr. L. Laberge, I have the honor of appearing before you to treat the important question of the combatting of contagious diseases; how to employ the means at our disposal in order to obtain the best results. I have certainly not come before you to ask you to establish the fact that the means at our disposal are insufficient; I come simply to pray you to aid me in doing the best with what we have.

If we cannot do more this year, we can at least lay the basis of an organization. Let us hope that next year the city council will grant the funds necessary to establish upon an efficient footing, this important department upon which public health depends. It would certainly not be proper to review here the reasons that should move every physician to make it a constant duty to seek to improve the hygienic condition of his surroundings; of his patients and of the city generally; it is the duty of every physician worthy of the name, to do all in his power to prevent disease. By acting thus he wins the affection of his patients, the respect of his confrères and does a truly patriotic work.

The science of hygiene is comparatively new, but the public interests itself greatly in those questions, not only because upon the observance of its laws depends one's well being, but also on account of its novelty.

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\* Read before the Montreal Medico-Chirurgical Society, Nov. 1, 1900.

It is therefore very easy for the family physician to become an apostle of hygiene, the propagator of the laws, the educator of the people. The citizen attacked in his family by the scourge of contagious disease, if properly advised by his physician, will always receive the health officers kindly and will help to render the accomplishment of their duties less arduous. If he properly understands that the officers of the department visit his home for the purpose of seeking to prevent the spread of contagion or to stamp it out and render his dwelling more healthy, I ask myself why he should not be pleased with such a visit.

I do not believe in the effectiveness of draconic legislation in hygienic matters; I think that much more can be obtained by persuasion. This is why I consider your co-operation to be indispensable to fight effectively against contagious diseases (which unfortunately frequently visit us), in order to dissipate the prejudices amongst ignorant people, prejudices that exist against all that comes from those who wear yellow buttons.

Every time that a case of contagious disease occurs in the practice of a physician, he is obliged by law to notify the Health Department as soon as possible. Then the Department has to take the measures necessary to protect the population against the infection. It is therefore the duty of the Health Department to take charge of or to watch carefully every case of contagious disease in the interests of public health.

It is desirable that whenever a case of contagious disease cannot be properly isolated at home, the patient should be sent to the contagious diseases hospital as soon as possible, and the house disinfected immediately after his departure. When the patient is kept at home, he should be confined to his room, which should be completely isolated from the other apartments.

Everything likely to become infected by microbes that can be disinfected only with difficulty, should be removed from the patient's room, such articles are carpets, curtains, upholstered chairs, etc., etc. A sheet should be suspended at the door of the room to prevent currents of air from escaping from it. This sheet should be kept constantly moist with a disinfectant solution. No one but the attending physician, the health inspector, and the nurse, should have access to the patient. A placard pointing out the danger of infection should be posted at the door of the house. If these precautions are taken and followed out rigorously to the satisfaction of the Health Department, it is not absolutely necessary to quarantine the entire house; when the family is opposed to sending the case to hospital, and it is

not possible to isolate the patient at home, it is absolutely necessary to completely isolate the whole house, to prevent any of the occupants from going out, and to forbid the entry of strangers. When these rules are violated, it is necessary to place a guard day and night at the door, whose duty it is to see that the quarantine regulations are observed.

The Department has two physicians to attend to the inspection of these cases, and see that the regulations of the Board of Health are carried out. When the family agrees to send the patient to hospital, the family physician should telephone to the Civic Hospital for the ambulance, always stating the nature of the disease; the ambulance is at once sent for the patient, and a nurse invariably accompanies it. After being used, the interior of the ambulance and its contents, blankets, mattress, are disinfected. Immediately upon his arrival, the patient receives the attention that his case requires. The family physician is admitted to visit his patient whenever he judges proper; but such visits should always be made in company with the hospital physician, who has charge of the patient, and administers the treatment. Unfortunately, the hospital is so arranged that only three kinds of infectious diseases can be received there; namely, scarlatina, diphtheria and smallpox; we have no accommodation for other infectious diseases, which must necessarily be isolated at home. When all danger of contagion has passed, either through the restoration to health of the patient or his removal to hospital, the family physician should notify the Health Department to disinfect, which is done with sulphur or formaline, in the case of the rooms, and with steam under pressure in the case of carpets, mattresses, etc. A special, tightly closed vehicle is sent to bring the effects to the disinfecting apparatus; another vehicle returns them to their owners, after disinfection; while their houses are being disinfected, the occupants can remain in the reception house, No. 700 Mount Royal Avenue, provided for them by the city. There is only one disinfector employed, but in case of necessity, others are engaged. On an average eight houses were disinfected daily last year; the smallest number was two, and the greatest eighteen per day. To obtain from a disinfection its maximum efficiency, either with sulphur or formaline, the holes, cracks, in fine, all the openings must be closed. The work is lengthy, and one man cannot do more than four houses a day, if the work is to be done conscientiously, as it should be. The disinfection by the steam apparatus is conducted by an engineer, who also collects the goods to be disinfected, and returns them to their owners after disinfection. He makes out a list of all the articles to be brought to the apparatus, which the owner signs



upon delivery, and upon their return the list is deposited in the Health Department. Many articles cannot be disinfected by the apparatus; such are those composed of leather, fur, rubber, etc. They should be left in the room exposed to the action of the disinfectant vapors. Besides this disinfection by the employees of the Health Department, the family physician should make people understand the importance of a thorough house cleaning. He should get them to make a further disinfection themselves, by washing with bi-chloride of mercury or other agent to be gratuitously furnished them by the Health Department, the furniture, floors, walls, and ceilings of their houses. Disinfection is never too well done; it is certainly the main precaution taken to protect public health against epidemics of all kinds. This operation is not so simple as it is too generally believed to be; it requires a sufficient and competent staff. Some physicians believe, with a certain amount of reason, that disinfection but half done is more dangerous than useful, for where there has been no disinfection at all, we know that there is danger in such or such a house, precautions are taken, people do not go into them; but if the disinfection has been badly done one remains under a false sense of security, and the consequence may be serious.

The diseases at the present time considered contagious, and that physicians should always report to the Health Department in order that the necessary precautions may be taken to prevent their dissemination are the following: Diphtheria, scarlatina, smallpox, chicken-pox, typhoid fever, measles, tuberculosis.

(1) *Diphtheria*.—When a physician finds amongst his patients a case that he has reason to suspect to be of a diphtheritic nature, he should at once apply the swab to the exudation, and after rubbing it over the surface of the coagulated serum in the tube, send the latter to the bacteriological laboratory at the Civic Hospital; twenty-four hours after the reception of the tube, an examination will be made of the culture, and he will be notified of the result. While awaiting the result of this examination, as a matter of precaution, the patient should be isolated from the other members of the family; and it would be better to make an injection of anti-toxine serum immediately. This treatment presents no danger when administered at the onset of the disease, and prevents the infection of the system, if we have to deal with a case of diphtheria. I think that the city should furnish the serum free of charge, in the case of the poor to be utilized in those doubtful cases upon demand of the attending physician. If the bacteriological diagnosis establishes the fact that we have to do with diphtheria, the patient should be isolated in a room containing neither carpet nor up-



holstered furniture. This isolation should be carried out to the satisfaction of the Health Department. The attending physician should give instructions that the patient should not spit upon the floor, but collect the sputum rags which should be burned, or better still, he should expectorate in a cuspidor containing a disinfectant solution. It is also to be desired that the physician should send a postal card to the Health Department, stating that a case of contagious disease has occurred in his practice, the probable source of contagion, and the address of the patient, the school frequented by the children, the establishment where the parents are employed, the name and address of the milkman, and the sanitary state of the house. This information is of the greatest use in order to permit of every source of contagion being dealt with. If the parents consent to send the patient to hospital, the ambulance will be sent, but only upon the demand of the family physician. After the departure of the patient, or after his cure, which should always be established by means of a negative culture upon coagulated serum, the Health Department carries out the disinfection. The department, according to the information obtained from the family physician which is absolutely confidential, notifies the school authorities as to the nature of the disease with which the pupil is attacked, notifies the parents, employers, and the medical inspectors visit the schools and factories to ascertain whether there are not other cases, and take the necessary measures to indicate the causes of the contagion. Special attention is directed to the milkman. Although the department of the food analyst is different from that which deals with contagious disease, they are all connected, and the division of the department does not prevent united action.

(2) *Scarlatina*.—This is an eminently contagious disease for which we have no specific treatment, a special reason why isolation and disinfection should be attended to in a thorough manner. Every physician, even in the presence of a doubtful case, should notify the sanitary authorities, who will send a medical inspector to aid him in his diagnosis, and divide with him the responsibility. The patient should be isolated in a separate apartment; the person in care of the patient should remain isolated with him, no one else but the family physician and the medical inspector being allowed to enter the room. If suitable isolation cannot be had in the house, the patient should be removed to hospital or else the whole house quarantined, no one being allowed either to enter or leave it. All the linen used by the patient should be immersed in an antiseptic solution, awaiting its being sent to the steam disinfecter. The sick room should contain only such furniture as is absolutely necessary and can be easily disinfected; the nurse should

be recommended to frequently wipe the floor with a cloth moistened with a disinfectant solution, remove all the dust; all the particles that may fall from the skin receive upon old pieces of linen that may be afterwards burned without any considerable loss and also with the exudations from the nose or mouth of the patient. After convalescence or after the departure of the patient, a thorough disinfection should be carried out by the Health Department; the clothing that cannot be put into boiling water, the mattresses, carpets and curtains should be disinfected by the steam disinfecting apparatus. When the disinfection is completed a thorough house-cleaning should be recommended: washing of the floors, walls, furniture, wood work, with a disinfectant solution. The drain should be disinfected and put in proper order. The period of incubation in scarlatina is supposed to be 8 days, it is therefore advisable to wait that time after disinfection before sending children to school.

(3) *Small-Pox, Varicella, Vaccination.*—Because of the resemblance between these two diseases at the commencement and the regrettable mistakes that may result, and in order to stamp out, as far as possible, a disease which, while not very grave, is very contagious and exceedingly disagreeable, I believe that the Health Department should disinfect the places where varicella has occurred and as far as possible rid the city of this troublesome and annoying disease. Smallpox is the scourge which can most easily be eradicated here, because every one affected with smallpox must be removed to hospital. Immediately after the patient's departure the house is disinfected, and the persons who have been in contact with him are quarantined for two weeks and vaccinated. This is a rigorous by-law, but in view of the results obtained within the past five years its efficiency and necessity must be recognized. There is a preventive treatment for this terrible disease which you all know, it is vaccination. It is unfortunate to witness the apathy, the indifference of certain families to a treatment so simple and that costs nothing. It is in this connection that the physicians should come to the assistance of the Health Department, either by vaccinating their patients themselves or inducing them to be vaccinated by the physicians of the Health Department without waiting for smallpox to reach our very doors. Every day we vaccinate, free of charge at the Health Department, those presenting themselves. Vaccine is furnished gratuitous to every physician applying for it and, when asked for, a public vaccinator is sent to vaccinate at the domicile. We are in duty bound to take the measures necessary to prevent the scourge which had so many victims in 1885, and that cost the city so much, from again getting a foothold in Montreal. The only means of preventing

these disasters is vaccination; but we cannot obtain satisfactory results without your help. We therefore count upon your assistance to attain the end we seek in this matter.

(4) *Typhoid Fever*.—Although by means of certain measures its infection can be destroyed, it is nevertheless an infectious disease which every year has only too many victims. The contagion, as you are aware, is communicated either by the evacuations from the intestines or by the urine, and in an indirect manner by water and milk. It is therefore important that the Department should be notified of all cases of typhoid fever that may occur in your practice. In order to facilitate its diagnosis the Municipal Bacteriological Laboratory will supply the sero-diagnosis, whenever you desire it. You have only to send a drop of blood from the patient to the Laboratory and you will receive my answer the same day. In this, as well as in the other contagious diseases, great precautions must be taken to avoid contamination. The stools and urine of the patient should be disinfected. After cure, the disinfection of the house should be done by the Health Department. As milk is a vehicle which often carries the contagion of typhoid fever, it is desirable that the Health Department should know the name of the milkman supplying the family attacked by the disease.

(5) *Measles*.—Unhappily, we have no hospital accommodation for cases of measles. The Civic Hospital is so arranged that there is room only for diphtheria, scarlatina and smallpox cases, yet this disease is eminently contagious. It is necessary to isolate the patient at home, and the greatest precautions should be taken if the dissemination of the disease is to be prevented.

As far as possible isolate the patient in a separate room, that no one is allowed to enter except the physician. When the disease is at an end, the family physician should notify the Health Department as he did at the outset of the disease. Measles, it is true, is not considered to be a very serious affection, yet it has a certain number of victims to its credit, and I do not see why the population should not be protected against so contagious a disease, and one that is more serious than is commonly thought. Therefore, here as in other affections of a contagious nature, isolation and disinfection should be carried out.

(6) *Tuberculosis*.—Consumption is caused by a bacillus with which you are all familiar. This bacillus increases in considerable quantities in the lungs of the tuberculous subjects, and the sputum of these patients contains a more or less considerable number of bacilli. When the sputum dries in the room, it may become pulverized, the particles being disseminated in the air; and persons who breathe it may inhale the bacilli and become tuberculosed after a shorter or longer time.



How many of those cases do you encounter in your daily practice. As you know, consumption is not an hereditary disease, it is purely and simply the worst kind of a contagious disease.

I believe, therefore, that it is the duty of the Health Department to make a strenuous effort to stamp out as far as possible this scourge which makes such great ravages; but in order to obtain good results, a hospital is necessary to receive and treat consumptives, who roam about the streets, contaminate our hospitals and infect public buildings. I do not think that we can stamp out tuberculosis with the means at present at our disposal, but we should do something; and even that would be much. We might, for example, seek for the tuberculous bacilli in the sputum sent to our department, do for tuberculosis what we are now doing for diphtheria and typhoid fever. If all the cases of tuberculosis were reported, we could keep a record of the cases in a register which would be oftentimes very interesting to consult; but particularly, we could disinfect every infected house, after the departure of the patient. In New York and Boston, cleanliness is recommended; the patient himself sees to the disinfection of his sputum; he is made to understand the advantages resulting therefrom to himself; in the first place, in preventing auto-infection, and in the next place in preventing the infection of the people in his vicinity. Then the house where a tuberculous patient has been should be disinfected, as in the case of a house where diphtheria or scarlatina has occurred. Since in these two large cities, this line of conduct has been adopted, the mortality from consumption has considerably diminished. Allow me to enumerate without comment, and as briefly as possible the staff composing the important department of which I have charge:—

1st. A clerk and his assistant, who receive the complaints and reports concerning contagious diseases.

2nd. A disinfecter and his assistant, whose duty it is to disinfect houses where infectious diseases have occurred.

3rd. Staff of the Civic Hospital.

4th. An engineer to disinfect with steam under pressure.

5th. An ambulance driver who removes the patients and calls for the articles to be disinfected at the disinfecting apparatus, and who returns them after disinfection.

In closing, allow me to tell you, that my object is not to discredit what has been done in the past, my object is not to revolutionize a system already established.—I come before you simply to expose facts and to study with you this important question. The fight against contagious diseases calls for your co-operation, your help, in order to es-



tablish upon a solid basis the wall that should protect us against contagious diseases. The Board of Health is composed of aldermen without special knowledge of this subject, and who, therefore, are not very much impressed with the danger that contagious diseases present to the population.

But I have every reason to believe that those gentlemen would receive with pleasure the suggestions you may be pleased to offer and be thankful for your assistance. Doctor Louis Laberge and myself hope to see the city of Montreal provided with a good Department to fight efficiently against contagious diseases.

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### MYXOMATOUS DEGENERATION OF THE CHORION.

BY

WILLIAM GARDNER, M.D.,

Professor of Gynæcology, McGill University; Gynæcologist to the Royal Victoria Hospital, Montreal.

The comparative rarity of the condition in the specimen I now show has induced me to think it may be of some use to the Society. It is an extremely well marked example of the vesicular mole, hydatidiform mole, or myxomatous degeneration of the chorion, as it is variously called.

The patient is multiparous, aged 33, and under the care of Dr. J. J. Ross. She has had five children, the youngest, three and a half years ago, was nursed. The recoveries in all instances have been good; no miscarriages. The last menstrual period occurred from the 21st to the 24th of January. The woman supposed she was pregnant, and everything was supposed to be going on well until May 1st, when she was suddenly seized with abdominal pain and profuse uterine hæmorrhage. She was kept in bed for a week or two and then allowed up, but continued to lose blood in varying quantity until the beginning of June, when she was again seized with severe pain and profuse hæmorrhage; I was then asked to see her.

There was symmetrical, uniform enlargement of the abdomen, decidedly greater than that which belongs to the presumed stage of pregnancy, as estimated by the date of the last menstruation. The feel was of elastic fluctuation, no foetal parts could be detected; no heart sounds were heard, but a distinct uterine souffle on the right side. Through the vagina, high in the pelvis, the cervix was discovered slightly dilated. It admitted the tip of the finger; but no pre-

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\* Read before the Montreal Medico-Chirurgical Society, June 21, 1901.

sensation or foetal part, only something elastic could be felt. During this day and the following night the hæmorrhage was alarming.

On the next afternoon she was sent to the Royal Victoria Hospital. On the way up in the ambulance she expelled portions of the growth. Under ether the uterus was cleared out. The os was considerably dilated and the mass of vesicles was scraped away without difficulty. No trace of foetus or placenta could be detected. The uterus contracted satisfactorily. What might be supposed to correspond to the placental site presented characters differing from the rest of the uterine cavity. It was elevated, uneven, lobulated and firm. The patient made an excellent recovery.

The fresh specimen in quantity was quite equal to half a pailful. It has been in formalin solution for three weeks, and in consequence has lost something of its normal appearance, the vesicles being considerably shrunken.

The future condition of this patient will be one to watch and be of great interest because of the well known relation of the vesicular mole to the recently much-studied syncytioma malignum. The development of this most interesting form of malignant disease may follow normal pregnancy, but it is especially frequent after mole pregnancy, and particularly after the vesicular mole. By some authors, 45 per cent. of the cases have been found to develop after the expulsion of the vesicular mole.

The recent symptoms in this case are of suspicious character.

#### DISCUSSION.

DR. E. W. ARCHIBALD had examined small portions of the tumor, both from the grape-like exterior and from the more solid remains of the placenta in the interior, but as such large portions had degenerated myxomatously, the microscopical sections did not show very much. All that one could find was myxomatous degeneration of the chorionic villi. Apart from this there was degeneration, the nature of which was not determined, showing as an unstained mass in the section and looking partly granular. In view of what Dr. Gardner had referred to, as to the possible occurrence of deciduoma malignum after these moles, two pieces had been especially examined for a possible evidence of any overgrowth of the syncytial cells, but Dr. Archibald was unable to find anything to suggest such an occurrence.

MR. F. A. LOCKHART thought the symptoms were practically of the type which one always got in these cases. Dr. Gardner had not said anything regarding the origin of the disease. This was a very disputed question. He believed the latest theory was that suggested by Dr.

Berry Hart, who claimed that the foetal thyroid was intimately concerned in the development of myxomatous into higher tissue. The foetal thyroid appeared about the third week of life and where it was not developed sufficiently one got this form of myxomatous degeneration. He cites as an example the umbilical cord which acts as an insulating material for the umbilical vessels. The cord is supplied by the maternal blood and not by the foetal, therefore it cannot obtain any of the secretions of the thyroid.

DR. W. W. CHIPMAN had looked over the sections made by Dr. Archibald and was rather interested to find that the active process was confined exclusively to the core of the villi, the covering seeming quite intact. He remembered seeing a case of this kind three years before, where one could trace the epithelial covering of the villus directly into the decidua of the uterus. It was at the time of the contention as to whether *deciduoma malignum* was of epithelial or mesoblastic origin, and this showed undoubtedly, that these cells as they had grown into the tissue of the uterus were epithelial. Metastases in the lung in this case were also of the same type.

Another singular case of this nature had been reported in the Edinburgh Obstetrical Society some years ago, where a woman had died with a *deciduoma malignum* growth in the brain. The question, of course, had been how it had got there, and it was explained that evidently the growth had begun in the first place in the lung, and had crossed from the pulmonary to the systemic circulation.

With regard to Dr. Hart's contention, he goes on to say that after the removal of the decidua it is well to give the patient thyroid extract in order that if any remains are left they can be hurried on through the myxomatous stage to the adult fibroid stage and therefore the risk of their becoming malignant is lessened.

DR. PERRIGO had had two cases of this condition, one a woman in her first pregnancy. She was supposed to be about five months pregnant but did not seem to be increasing in size. Every other day or so she had a slight show of blood with moderate pain. On making an examination he had found something presenting which, as he had already seen a case, he recognized as a vesicular mole. She was treated in the usual way and made a good recovery. Another case, which he had seen about three years ago, was supposed to be further advanced in pregnancy and had as a first symptom a profuse hæmorrhage. The vagina was plugged with iodoform gauze for two or three days, and then on making a proper examination the condition had been recognized from the presenting part, and an anæsthetic administered and the uterus emptied. The recovery was perfectly smooth, only that the



uterus had been some days in properly contracting, the woman being in a flabby condition and very anæmic. Up to the present, three years, she has had perfect health.

DR. GARDNER, in reply, stated that he had omitted to emphasize the fact that the development of the uterus in size had been disproportionate to the duration of the pregnancy, judging from the date of the last menstrual period. In May the uterus had developed to quite the size of a seven month's pregnancy, although only three months had passed, and the increase had been relatively rapid towards the last.

### A RAPIDLY FATAL CASE OF SCARLATINA.\*

BY

W. S. MORROW, M.D.

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On February 6, 1901, Mr. H. C. telephoned me that his little boy had just died, and, as no doctor had seen him, asked me to go to his house and endeavour to ascertain the cause of death.

The following history was given me:—Freddy C., a boy of two years and eleven months, had seemed well until five o'clock the previous afternoon. At that hour he came in from play, complained of feeling sick and vomited. During the night he had a loose, dark-coloured motion, but on the morning of the day of his death he awoke quite bright, and played with his brother in bed. He slept some during the forenoon, and at twelve lay on his father's knee and ate a baked apple. His eyes were heavy; but apart from this, his parents, who are both intelligent people, did not feel anxious about his appearance. About three p.m. his mother noticed his feet cold, and shortly afterwards he had a convulsion, followed by a state of stupor. He had several more convulsions and died about half-past five p.m., without regaining consciousness.

The body was seen about four hours after death and a partial examination was made. The body was that of a well-nourished child with signs of moderate rickets. Reddish patches were present on the abdomen and thighs. The glands at the angle of the jaw were enlarged, and, on prying open the mouth, the tonsils were seen enlarged and reddened, and the redness extended upwards on to the palate. The peritoneum, stomach and intestines were free from inflammation. The lungs were very dark and hyperæmic, but not consolidated. The veins over the heart were much distended.

This hasty examination combined with the fact that a scarlatinal

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\* Read before the Montreal Medico-Chirurgical Society, June 21, 1901.



epidemic was raging in the city at the time, led me to regard scarlatina as the probable cause of death. This opinion was confirmed by the fact that his brother was taken down with scarlatina nine days later. The duration of the disease, in the case reported, from the first symptom was between twenty-four and twenty-five hours.

While this form of scarlatina is well recognized, cases as rapid as this are sufficiently rare to be worthy of notice. The most rapid case mentioned in Nothnagel's System of Medicine was twenty-six hours. Goodhart saw a case die inside of thirty-six hours. Keating's Cyclopædia says cases die inside of twenty-four hours, but does not cite instances.

One of the most interesting contributions to the literature of this subject is a paper read before the Montreal Medico-Chirurgical Society twenty-five years ago, by Dr. W. E. Bessey.<sup>1</sup> There had just been a severe epidemic of scarlatina in the city, and he reported a number of malignant cases, in one of which death occurred at the end of twenty-four hours. He thought that malignant cases were more common in those parts of the city which were most poorly drained and most insanitary, and that a poor constitution, especially a strumous cachexia, increased the likelihood of the disease assuming a malignant type.

DR. ANDERSON thought this case was extremely interesting from a pathological standpoint, and suggested uræmia as the probable cause of death. He related his experience with two cases, in which a well marked albumin ring and the presence of numerous casts had shown the presence of grave renal affection without any symptoms to point to such a lesion.

DR. ENGLAND had never heard any explanation of the reason why different epidemics varied so much in virulence. From 1885 to 1890 scarlatina in Montreal had been of a mild type and was almost as little thought of as measles, whereas in the years following it had been of a particularly severe type, many cases of sudden death such as this being reported. He did not think we should look to the kidneys as an explanation of this, but rather to the peculiar virulence of the epidemic.

DR. W. E. DEEKS suggested that one explanation of the difference in virulency of epidemics might be in the attenuation of the bacillus. Bacteriologists could now attenuate in various ways all sorts of organisms and bring about in the lower animals less virulent forms of disease.

DR. GIRDWOOD offered as an explanation of the variability in virulence the recent climatic conditions, an exceptionably mild spring and winter pointed to the possibility that the germs did not get the usual

<sup>1</sup> Dr. W. E. Bessey, Notes and Observations on Malignant Scarlatina and Allied Affections, *Canada Medical Record*, 1875, III., 453-463.

amount of freezing. There had been great vegetable growth this year and an abundance of warmth and moisture, which were productive of increased growth of all kinds of fungi. He suggested that by comparing the climatic conditions for a number of years with the virulence of the infectious diseases for the same time, one might be able to determine whether this was a factor or not in altering the virulence.

## INTESTINAL OBSTRUCTION BY A FOREIGN BODY.

BY

J. J. ROSS, M.D.,

AND

D. D. MACTAGGART, M.D.,

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Montreal General Hospital.

The following interesting case is worthy of putting on record both from the unusual cause of obstruction which was found post mortem in the intestine and the rapidly fatal result.

W. P., male, aged 52 years, fitter in the Grand Trunk Railway, had always been a healthy man. Eleven years ago he had an attack of typhoid fever, and for some years past has been a heavy drinker.

On the morning of October 27, 1901, he rose in his usual good health, took a hearty breakfast and went for a walk. On returning, a short time before dinner, his wife gave him half of an orange, cut diametrically. He removed the pips, expressed the juice, and evidently swallowed the pulp (umbrella fashion). After this he ate a hearty dinner and felt well until supper time, when he complained of an uncomfortable feeling over the epigastric region, which remained until he went to bed. After sleeping well all night, on awakening the next morning, he still had the same pain, but it was more severe in character. At 6 a.m., he went out, took a glass of gin and went to work at 7 a.m., without taking any breakfast. The pain, now spasmodic in character, gradually became more intense until at 11 a.m. he was compelled to give up work and go home. After reaching the house he lay down on the bed, and at 2 p.m. sent for his wife who was absent for the day. When she arrived she gave him a teaspoonful of "painkiller" which was followed by a slight relief. Shortly afterwards he commenced vomiting a foul-smelling fecal matter and the pain became agonizing.

I saw him about 5 p.m., when he seemed to be in a state of great collapse. The temperature was subnormal, the pulse almost imperceptible, ranging between 140 and 150, the extremities cold, the face

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\* Read before the Montreal Medico-Chirurgical Society, Nov. 15, 1901.

pinched, and the abdomen rigid, especially on the right side. I ordered heat to the extremities with hot turpentine stupes to the abdomen, and suggested that he be removed to the hospital for surgical interference, if such should prove necessary. He, however, refused to go to the hospital so I left him, intending to return in an hour or so. He died at 6.30 p.m., before he could be moved, and a postmortem was obtained through the indirect kindness of Dr. Hutchison and the direct kindness of Dr. MacTaggart whose report follows:—

On opening the body, and examining the small intestines, none of the usual forms of obstruction, such as volvulus and kinks in the intestines were to be found. At a point about three inches above the ileo-cæcal valve a hard mass could be felt completely filling the lumen. Above this point for the full length of the small intestines there was gaseous distension, and the bowel contained a considerable amount of fluid. On pressing the contents of the bowels down from above, this mass already described became enlarged. On opening the bowel at the point at which the mass was situated, it was found to be formed by a portion of an orange. The orange had evidently had the outer rind removed and then had been cut in halves across the segments; and the portion contained in the bowel consisted of nine segments, or about three-quarters of the half orange. The pulp had all been digested; but the segments were not separated from each other and apparently lay in such a position in the bowel that the fluid contents of the bowel expanded the segments sufficiently to block the lumen, and thus caused the orange to act as a valve preventing all passage of fluids.

### PECULIAR CASE OF BLADDER REFLEX.\*

BY

DUNCAN P. ANDERSON, B.A., M.D.,

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I make so bold as to report this case, not with the view of startling you all with theories of my own manufacture, but on the contrary to obtain the benefits of a discussion by those whose experience entitles them to theorize. The case is a most peculiar one, principally from the fact of its being of such an obscure nature, and the symptoms of such a fleeting character.

The following is as full a history as I could obtain from the patient:—

*August 25, 1899.*—H.S., bachelor, aged 71 years.

*Complaints.*—Occasional attacks of (a) slight dizziness, (b) irregular

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\* Read before the Montreal Medico-Chirurgical Society, June 21, 1901.



pulse, (c) fluttering heart, (d) passage of large amount of urine, with (e) frequency of micturition.

*History of Present Illness.*—About five years ago patient had what he calls his first paroxysm, which came on during the night. He was awakened with a desire to urinate, and simultaneously with this there was a species of dizziness, fluttering of the heart, with very irregular intermittent pulse. He would have to urinate about four or five times during the next three hours or so, the urine passed during this time being about one-half or three-quarters of a chamber. It was very light in colour, as patient says, "almost like water." After this the polyuria passed off, but the irregular heart action lasted about twelve hours longer, when all symptoms completely disappeared, leaving him as well as before.

These attacks have been occurring ever since at intervals of from two to six weeks. Some of these have been so severe that patient has had both to urinate and defæcate at the same time, the one being just as bad as the other. There was no apparent cause for these attacks that patient could assign. Two attacks came on at intervals of six or seven days.

*Past History.*—Patient was born in Scotland in 1822, lived in Bengal, India, from 1847 to 1878, then came to this country where he has lived ever since. Has always enjoyed excellent health. During his 32 years of life in India he worshipped freely at the shrines of both Venus and Bacchus with the result that in 1853 he contracted a very severe gonorrhœal urethritis and cordæ. The urethritis lasted three years, was never treated by any physician, but only by chewing of herbs obtained from local sources, so that the condition was never properly cured. On several occasions he contracted chancroids, which he said he treated by burning them out with caustic, as was a common custom among the Europeans there; never had syphilis. Had a very severe attack of influenza last February, but this did not aggravate his present symptoms. Fourteen months ago he took a trip alone around the world, lasting eighteen months.

He has had occasional attacks of gout for the past six years, especially after the free use of alcoholic stimulants. Has had a double inguinal hernia for the past nineteen years. He also states that he had fluid in the right side of the scrotum for nineteen years, which was removed (a black fluid) while he was in New York about a year ago.

*Family History.*—Good.

*Present Condition.*—Patient is a very bright, active, intelligent, old man, who appears much younger than his years.



Pulse, 60; respirations, 18; temperature, 98°F.

Examination of the thorax shows that both the lungs and heart are quite normal.

Examination of the abdomen shows all the abdominal viscera to be healthy. No evidence of floating or movable kidney. On the right side there is a large, direct, reducible inguinal hernia, while on the left there is a small, indirect, inguinal hernia. Both of these herniæ are kept up by means of a truss.

Locomotor and nervous systems healthy.

Digestive system.—Tongue clean and moist, appetite good, bowels regular.

Genito urinary system.—On examination of the scrotum and testicles there is no evidence of hydrocele nor of any change in the epididymus. No urethral stricture. Prostate was found considerably enlarged on examination of the rectum, especially the left lobe. There was no tenderness, however, and immediately after voiding his urine two ounces of residual urine was withdrawn from the bladder by catheterization.

Urine.—Beyond the fact of its being somewhat acid in reaction, it was quite healthy. No threads found in the urine, and no sediment whatever.

At this time I concluded by a process of exclusion that the patient might possibly be suffering from these attacks of tachycardia and polyuria secondary to some reflex from the bladder brought on by the enlarged prostate.

*Treatment.*—I followed a simple course of treatment, namely, the withdrawal of residual urine after his having voided his urine, and a wash of boric acid.

The following is a tabular account of the duration and intervals between the attacks for six months:—

1900, Dec. 30, 4 a.m.

1901, Jan. 16, 1.30 a.m. (11 days.)

Jan. 19, 4 a.m. (9 days.)

Feb. 8, 3 p.m. (20 days.)

Feb. 19 4 p.m. (11 days, polyuria only.)

Feb. 25, 2 a.m. (6 days.)

Mar. 26, 4 to 6 a.m. (moderate, 29 days.)

April 27, 4 to 6 a.m. (32 days.)

May 19, 2 to 6 a.m. (23 days.)

June 11, 1 to 4 a.m. (23 days.)      **Attack moderate in severity.**

Urine (June 11th, during attack) sp. gr. 1010, very slightly acid, watery, and almost colourless. (June 12th) sp. gr. 1020, clear amber or straw coloured.

## AN UNUSUAL TUMOR OF THE SOFT PALATE.

BY

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The patient whose history is here presented, was a male of about forty-five years of age. He came to the writer's clinic with the following complaint:—For the past twenty-four or forty-eight hours he had been suffering great pain and inconvenience with what he described as a painful swelling of the throat.

On questioning him, the following information was elicited. He had always been strong, and healthy, never having suffered from any illness, with the exception of two or three attacks of pain and swelling in the metatarso-phalangeal joint of the great toe, and about the same number of attacks of a similar lesion to that for which he now sought relief.

Examination of the mouth and pharynx demonstrated a tender mass of vivid pink color, the size of a marble, situated on the right half of the soft palate.

This on palpitation was firm and without fluctuation. The following interesting fact was mentioned by the patient at the time of examination.

He had noticed that the inflammatory attacks in the metatarso-phalangeal articulation had never occurred at the same time as the attacks similar to that for which he now sought relief, and further, it was his fixed conviction that such inflammation migrated from his foot to his throat.

On consideration, the diagnosis rested between a syphilitic gumma, and a lesion due to gout. The former is by no means rare, but the latter is exceedingly so. The history and the appearance pointing against the possibility of this tumor being luetic in origin, the patient was treated for gout, which was followed almost immediately by a marked and rapid resolution of the tumor, and all symptoms then present. This case is of interest from a diagnostic standpoint, as the similarity of the tumor to a gummatous infiltration was most marked, and indeed, it is quite unlikely that the diagnosis made would have been possible, although one could not help noticing the extraordinary coloration quite characteristic of gouty lesions of these parts—if it had not been for a strong anti-venereal history, combined with one typical of what is commonly known as gout.

# SOME GENERAL PRINCIPLES OF INTER-POLAR CURRENTS, AS THERAPEUTICAL AGENTS, WITH SPECIAL REFER- ENCE TO THOSE OF THE STATIC MACHINE.

BY

S. FAIRWEATHER WILSON, M.D.

A general survey of the subject of electricity cannot but impress upon one the all-important fact that electrical energy, whether generated by the revolving plates of the static machine, through the coils of a Faradic, or from the cells of a galvanic battery, is but the manifestation of the self-same force in nature, that it is governed by the same general laws, whether used as a mechanical or therapeutical agent, and, that the primary difference in all electrical currents lies solely in the relative ratio of the two physical qualities—voltage and amperage. This being the case, it must follow, that to be able to use electricity intelligently, to know which form of electrical energy to apply and the manner of applying it, when to expect and when not to expect favourable results, one must at the outset, not only have a knowledge of its own general laws, but (as will be shown later) must also have an intimate knowledge of the nature of the structures to which this agent is to be applied.

In the same way as one would not expect to get the styptic properties of the tincture ferri mur. from a solution of citrate of iron (although the iron is present in each case), one would not expect to get from a current of galvanism, the penetrating power of the high voltage static current, although in both instances one may be using electricity; nor could one expect the same physiological effect from the simple continuous current passing through the tissues, that would be expected from that of a current of many interruptions or alternations.

## *Polar and Inter-Polar Actions Distinguished.*

The action which takes place at or in the immediate vicinity of either electrode, is known as the polar action (positive or negative) while the action which takes place in the tissues between the electrodes, is termed the inter-polar action, and to the changes effected in the latter instance, is given the name catalysis. Catalysis includes a certain amount of electrolysis, cataphoresis and accelerated osmosis; processes now to be explained briefly as necessary to an intelligent knowledge of the inter-polar current.

*Electrolysis.*—Around each electrode, when the current is of sufficient

energy to overcome the chemical affinity existing between the atoms or elements of substances, there is set up a process of decomposition termed electrolysis.

The decomposition of electrolysis differs from that of galvano-cauterization, in that, in the former, the electro motive force and the polarity of the current and that of the elements is the active agent, whereas in the latter (galvano-cauterization) the active agent is the heat which is generated by electric energy in the presence of resistance.

In Electrolysis the substance to be decomposed is known as the electrolyte. The elements into which the electrolyte is decomposed, are termed *ions*. When an electrolyte is decomposed, the ions which are generated at the negative appear at the positive pole, and are termed *anions*; while those generated at the positive pole, appear at the negative pole, and are termed *cations*.

It is in accordance with the general law, that like poles repel and unlike attract, that the anions, which are electro-negative, appear at the positive pole, and the cations which are electro-positive, appear at the negative pole.

The anions or electro-negative elements, in human tissue embrace :—Oxygen, nitrogen, chlorine, sulphur, etc., etc. The cations, or electro-positive elements, include:—Hydrogen, potassium, sodium, calcium, etc., etc.

The anions are known as the acid radicals, and because of their polarity, they must always be attracted to, or around, the positive electrode during electrolysis; while the cations are known as the basic radicals, and they, for a like reason, must tend to, or do, accumulate, around the negative electrode.

*Cataphoresis*.—The process of carrying substances into or through the tissues by the electric current is known as cataphoresis, and is made use of very extensively when the local action of drugs is required.

Some would maintain that this process of cataphoresis is purely a physical act of the current, and that consequently as the current always flows from positive to negative the substance should always be applied through or on the positive pole. That this is an erroneous idea, and that the diffusion depends entirely on the polarity of its elements, can be practically shown by experiment.

*Osmosis*.—It is known that if two fluids of different densities be separated by a porous diaphragm, there is always a continuous flow of the lighter to denser fluid called osmosis. If a current of electricity is passing in the same direction, this natural flow is increased, whereas if the direction of the electrical current is reversed this osmotic action is also reversed, with the electric current from the denser to the less dense fluid.



This power of electric currents of increasing osmotic action and influencing it in its own direction, probably in some measure explains the part played by electricity in hastening the absorption of fluids effused into jointed or serous membranes.

*The Therapeutical Action of Inter-Polar Currents.*

The effects on human tissue, of a current, the electrical energy of which is not of sufficient strength to perceptibly overcome the chemical affinity of the elements composing the tissue through which it passes, constitute its therapeutical action.

When one wishes to get at the primary action of glandular structures, or of any functionary secreting or excreting organ, or to excite to action nerve cells, or nerve or muscular fibre, if he can make use of an agent, the primary action of which is directly on the cellular elements of these tissues, and the inherent action of which is to increase or diminish the cellular activity as required and encourage all physiological processes, I think it must be admitted that he has a power which must be of great importance in getting therapeutic results. Let us consider in how far the inter-polar current fulfils these indications:—

(1) There is the local increase or decrease in *cellular activity*, depending on the direction of the current.

(2) The *changes* brought about in the *structural elements* of the tissue.

(3) The physiological effects on human organism.

*Cellular Activity.*—If the electrode of a galvanic current be placed over the salivary gland, the saliva will be increased or diminished according to whether the negative or positive electrode, respectively, be used over the gland, while there will also be imparted to the mouth, a distinct metallic taste.

This increased flow of saliva is due to increased activity in the cellular elements, which causes an increase in the blood supply. This increase in the supply of blood to the gland, must be through the nervous system, by the current exciting a secondary action on the central nerve centres. The blood vessels become dilated, not in any way through the muscular tissue, because the primary effect of a current on muscular tissue is to cause it to contract. This localized increased activity in the cellular elements, in addition to increasing the flow of saliva, must also increase the metabolism and promote any functional process. And, to generalize, that which occurs in the case of the salivary gland must also take place in all other tissues along the line of force of the current.

*Changes in the structural elements of tissue.*—When considering the polar actions on human tissue of currents of sufficient strength, elec-

trolysis and cataphoresis have been shown to take place at the points of contact of the electrodes with the tissue, according to the electromotive force, the polarities of the currents, and the polarities of the elements in the tissue make-up.

When an inter-polar current of similar intensity is passing through similar tissue, it must in the same way, (though perhaps in a somewhat less degree) influence all elements along its lines of force with respect to their polarity, whether applied locally or generally. The same chemical and electrical laws hold good, but it must be admitted, however, that the more complex the electrolyte, and the more general the application of the current, the greater the number of decompositions and combinations that must necessarily take place. Hence it would take an expert analytical chemist and electrician to determine all the changes which would actually take place along the course of a current passing through the human body.

However, we know, (1) that about seventeen elements, oxygen, hydrogen, nitrogen, chlorine, potassium, sodium, etc., enter into the composition of human tissue in varying proportions, and combinations; such as water, common salt in solution, albumen and mucin, etc.

(2) We know that each of these elements will under all conditions preserve its polarity in reference to the current of electricity, and (3) we know that the majority of these compound substances can be broken up by all currents of density sufficient to overcome the chemical affinity existing between the elements or ions.

(4) Althaus, 1866-67, by a series of microscopical observations on the changes brought about by the galvanic current, proved that the degree of disintegration was directly proportional to the electro-motive force, and to the softness and vascularity of the structures.

(5) Again it has been clearly shown by Dr. Stone, in his Lumleian Lectures before the College of Physicians, London, that the human body, after the passage of a continuous current through it, will for some hours after give off a current that is capable of deflecting the needle of the galvanometer, as high as 12 ma., or, in other words, that the body becomes a secondary battery, storing up in its tissues, a certain amount of electricity; and we know that there can be no storing up of electricity, without some decomposition or chemical action.

(6) Mr. Weiss has conclusively shown that if a continuous current of electricity be passed for a time through muscular tissue, the contraction produced will gradually decrease, but that if the current be reversed, the contraction will again appear. This action can only be explained on the principle of polarization, as is an ordinary battery; and polarization can only take place where there is decomposition or chemical

action, as before. If rest would at once restore this contractile power to the muscle, its loss of contractility might be attributed to fatigue, but such is not the case, whereas the reversing of the current destroys the polarization and at once restores its contractility. Therefore, it is not unreasonable to assume that a certain amount of electrolysis and interchange of elements does take place through all the tissues, along the lines of force through which the current passes, and it is also very reasonable to assume, that the lower the vitality of the tissues, where the cells cannot recuperate themselves so well as the normal cells, where the "state of stress" of the internal atoms of the molecules or the "surface tension" of these molecules offers less resistance to any directional activity imparted to it, the greater is the decomposition and interchange that must take place among the atoms or molecules. Furthermore, it is even claimed by some, that the microscope reveals many minute structural changes in the tissue through which a continuous current has been passing.

The *physiological effects* of the inter-polar current on the human organism, are a consequence of this increased cellular activity and electro-chemical decomposition or electrolysis.

The effects manifested by magnetism or electric fields are the same as the changes induced by the inter-polar current, when generally or centrally applied, and they have been carefully investigated by Prof. W. J. Herdman of the University of Michigan by experiments on animals and man. The results of his work are as follows:—Magnetic energy is in some way transformed into physiological energy, and this increased energy manifested itself in the increased weight, growth and development of the animals experimented upon, and in the increased elimination of water, and urea in man. Further investigation by Dr. Herdman showed that over-stimulation caused the death of the animals from exhaustion. From these experiments on animals and man, he says one cannot escape the conclusion, that alternating magnetic fields and quickened tissue metabolism stand in the relation of cause and effect. These effects have been corroborated by Prof. l'Arsenal, of Paris, by laboratory experiments on man and lower animals, that is, that the production of water, carbon dioxide, and urea is increased 40 to 50 per cent., and Prof. Renzi has shown that 50 per cent. more sulphur is oxidized, producing sulphuric acid.

The inter-polar current in its passage through tissues, must by the decompositions taking place, and by its action on the oxygen present, develop more or less ozone, and hence it must have a powerful stimulant, tonic and probably germicidal action.

Again it has been conclusively shown that it increases the flow of



blood, lymph and other fluids, through the tissue, in the direction of the current; or in other words, increases the osmotic action always going on, and thus increases absorption and improves nutrition generally.

Therefore from these established facts taken collectively, our conclusion can be none other than that any inter-polar current, whether galvanic, faradic or static, when applied in accordance with electrical laws and the indications present, by virtue of its electro-motive force and its polarity, acting on all nerve and muscle fibre, cells, molecules or atoms, by encouraging all capillary and lymphatic circulation; by accelerating all electrolytic, cataphoretic and osmotic processes, and by increasing the absorption of oxygen, and the elimination of carbon-dioxide, water, and urea, by transforming electrical into physiological energy, must either directly or indirectly improve each and every functional process, such as that of the kidneys, skin and digestion. This fact once established, we must admit that there is a rational explanation for treatments by electricity properly administered in such diseases as hysteria, neurasthenia, rheumatism, etc., and also that it should prove itself a valuable adjunct in anæmia, indigestion, convalescence after exhausting diseases, and the like.

#### *Static Electricity.*

In the static machine, we have an agent by which we can impart to the whole body of the patient all the nutritional effects that can be got locally by the polar current of any other battery, and in addition, when required, one can, by means of special electrodes, so apply the current to any particular organ of the body, as to stimulate any desired local function.

Assuming now that we have an efficient static machine, say of 16 to 24 or 32 plates of from 28" to 32" in diameter; that we have it grounded in order to insure us its full working capacity, that we have our platform properly connected with the sliding pole of the prime conductor, that our platform is properly insulated and made so as not to leak off the current; that we have all the necessary electrodes, what then, are the different forms of treatment?

*General Electrification* embraces (a) Simple continuous, (b) Spark gap, (c) Potential alternating currents.

In these treatments the patient removes only outdoor garments and ornaments of metal and is seated comfortably on the insulated platform which is connected with the sliding rod of the positive or negative prime conductor, while the other rod is properly grounded and the machine set in rapid motion.

In the *simple continuous* form of general electrification the prime



conductors are widely opened beyond sparking distance, whereby no interruption to the current flow occurs.

In the *spark gap* or *potential alternating* forms, the prime conductors are opened to any sparking distance, or there is some other device introduced into the circuit whereby the current flow is broken and an active rapid change of potential from the maximum to zero is incessantly secured.

Very soon the patient is enveloped in an atmosphere charged with electricity and, when needed, large quantities of ozone can be constantly generated, which, being inhaled by the patient, imparts a general stimulating tonic influence. At the same time this rapid motion and large number of plates ensures a current of little amperage, but of very high potential—a potential estimated at from 500,000 to 1,000,000 volts. Such a potential:—(a) Can overcome and illumine the vacuum of Crooke's tube, which the current from no other form of medical battery, galvanic or faradic, is capable of doing. (b) Can break through the insulation of an air space of several inches; even from the finger of an insulated patient; separated at some distance it will cause the enclosed wire of an ordinary installed incandescent globe to glow. (c) Can penetrate and electrify the atmosphere around an insulated patient, with sufficient electricity for three or four feet, that its presence can be felt and easily proved; or (d) which can produce a spark between the terminals of the discharging rods, that will cause an oscillation or vibration in the air, felt throughout the whole room synchronous with the sparks from the terminals. (e) Can readily overcome the great, but to it, comparatively slight resistance of the human body; (f) and then when in addition to the very high potential or electromotive force of this current, its enormous power of accumulation, condensation and diffusion, and the conductivity of the tissues and fluids of the human organism is considered, is it not reasonable to conclude that when a patient is insulated and in connection with this current flow, that the electricity will penetrate all tissues of the body, even down to the cellular elements, and then by its polarity, so influence the polarities of these tissue elements (atomic and molecular) and effect such electrolytic and phoretic action on them, (although the changes may be imperceptible to the naked eye) that all the effects just described under inter-polar currents must be secured—and that the body, as also shown in remarks on inter-polar currents in general, must be practically converted into a large storage battery? Furthermore, would it not be reasonable also, to assume, that should this human storage battery become polarized or rendered inactive by disease or otherwise, (as manifested by functional inactivity, as of the kidneys or liver) or by any

functional derangement (as manifested by pain, as that of lumbago) that this static current, by its enormously wide range of potential change and by its polarity and power of penetration, would so influence the polarities and potential of at least the seventeen electric elements entering into tissue formation, by imparting to them, the same potential as it has itself, or by effecting an equalization of their polarities, that it would depolarize and renew the energy of this human battery; liberating the potential energy of the cellular elements, exciting all that cellular activity as explained under the remarks on the actions of inter-polar currents, causing the same demand for blood and oxygen as therein shown, and thereby accelerating the metabolism and metamorphosis? This increase which has been variously estimated at from 20 to 40 per cent., and thus by promoting all these functional processes through this general increased cellular activity, it must restore the appetite, induce sleep, relieve pain and promote nutrition generally. This is the form of treatment by electricity, so favorably referred to and recommended by Dr. Lewis Jones, in the *British Medical Journal* of Nov. 24th, 1900, for certain forms of mental disease and by many other observers since that date.

### Case Reports.

*Sciatica*.—Mrs. O. applied for treatment, complaining of great pain throughout the whole length of her thigh and leg, and the sensation of coldness of the limb at all times. She gave the following history:—

In March, 1897 she was seized during the night with a violent pain in the leg, so severe that she was obliged to call in medical aid. She was relieved by morphine of the intensity of the pain, but from that date until the present, October 5th, 1901, she has been under the medical supervision of her local doctor, and one of the Montreal surgeons, who had given her all forms of treatment, local and constitutional; with no absolute relief from pain, which at times was very severe.

*Present condition*.—Aged 70, anæmic, weak, tired on little exertion, poor appetite and much distress in stomach after food, although taking only the very plainest, sleepless nights, and complaining of more or less pain at all times throughout the whole length of one lower extremity, which was increased by placing her foot on any uneven surface while walking, to the extent that she was liable to fall. She also complained of a cold, unnatural feeling throughout right foot, unrelieved by heat; tender points along course of sciatic nerve. Urine scanty, but no albumen, no exaggeration of tendon reflexes: has failed much in general health and strength during the last three years, but

more particularly during the last year, probably due in a great measure to the unceasing pain, the very limited dietary, and avoidance of outdoor exercise and recreation, except during the most favorable weather.

*Treatment.*—General electrification with positive insulation, for five minutes. Negative insulation and convective spray discharge over general surface of body, particularly over spine, kidneys, epigastrium and sciatic nerve, five minutes. General electrification, positive insulation, with crown, five minutes.

This resulted in relief of pain lasting about twelve hours daily; no change in cold sensation of foot. Sleeping better, otherwise condition much the same.

Second Week.—General electrification with potential alternation and spray as before, five minutes. Mild percussive sparks over sciatic nerve and frictional sparks to foot, whole length of leg and hips; five minutes. General electrification, with crown, five minutes; also ordered more liberal diet.

Result:—Entire absence of pain in limb, with only occasional ache; slight improvement in feeling of foot, appetite improving, sleeping much better, and on the whole, general condition improved.

Third Week.—Negative electric water bath to foot (five minutes), 70 m.a., followed by the same static treatment as in second week. Ordered unrestricted diet and outdoor exercise daily, regardless of weather.

Result:—No pain whatever, in leg or foot; foot remains warm about ten hours after treatment without any artificial heat. General condition much improved. Appetite better.

Fourth Week.—Same as third. Still free from pain; foot retains warmth sometimes for 24 hours, can walk on street as she expresses it "with head erect," and with no danger of falling by stepping on an uneven surface; out all kinds of weather, cold or raining, in November; feels like another person. The points noted in this case are:—

- (1) The chronicity of the case,  $3\frac{1}{2}$  yrs.
- (2) Relief from pain for 12 hours; after first week's treatment.
- (3) Freedom from pain after second week.
- (4) No restriction over diet or outdoor engagements.
- (5) April 17th, nearly six months passed, and reports no return of pain.

II.—*Sciatica.*—Mr. M., aged 25 years, January, 1901.

General health good; came complaining of sciatica of three days standing—could walk up steps only with difficulty, the pain was so

severe. Gave a history of a former attack three years ago, which lasted six weeks or longer, under ordinary treatment.

Static electricity relieved the pain entirely, but it returned in about six hours. Three subsequent treatments made an entire cure, in so far that up to date, pain has not returned.

*III.—Sciatica.*—F.M., aged 25. Came on after a wrench, stepping in a hole while walking; of three weeks duration, and growing worse.

Pain relieved after first treatment, and returned during that night, but has not been felt since fourth treatment.

I have chosen these from a number of such cases, in all of which cures were effected, as well as a number of brachial neuralgias.

In no form of pain or disease have I had more satisfactory results than in the treatment of lumbago by electricity. As many, no doubt, would fail to see the benefits of electricity in anæmia, I have notes of one case.

*Anæmia.*—Mrs. S., an anæmic, highly nervous young lady, 24 years of age, with the following history:—

Since 15 years of age, has always been pale and weak; unable to do any kind of household work, except of the lightest kind; almost continually under medical attendance, yet gradually getting worse, so that when she applied to me December 1st, '99, she was unable to ascend an ordinary flight of stairs without stopping to rest. Always feeling tired during day, and unable to sleep at night. Appetite poor, unusually nervous, menstruation scanty, pale and irregular, profuse leucorrhœa, and constant pain in back. Hæmic murmurs distinctly heard over cardiac region.

Treatment was begun December 1st, and continued until December 21st, 22 seances. On the 21st I considered her general condition so much improved that static electrical treatment was discontinued. As the leucorrhœa continued, I recommended curetting of uterus or local galvanism, intending to use inter-uterine copper electrode. She chose the curetting, which I did one month later, in January, 1900.

*Present Condition.*—Fifteen months after treatment, is all that could be desired; she is the picture of health, good color, good appetite, able to walk any reasonable distance, menstruation regular, and flow sufficient. Has required no treatment since leaving me.

I should say that contrary to the usual methods of treating a case of this kind, instead of rest in bed, she was instructed to walk daily, the distance to depend on her own feelings. Medical treatment, Bland's pills only, of which also, she had previously taken many, but with no marked effect until electro-static treatment was added.



# RETROSPECT OF CURRENT LITERATURE.

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## Medicine.

UNDER THE CHARGE OF JAMES STEWART.

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### **Pneumonia as a Complication of Typhoid Fever.**

FISHER, HENRY W., M.D. "Typhoid Fever Complicated by Croupous Pneumonia; with a Report of Four Fatal Cases." *Amer. Jour. of Med. Sciences*, August, 1901.

The diseases which have many clinical features in common in their onset are yet often indistinguishable even after many days. The complication of typhoid fever with pneumonia masks the diagnostic features of the former so as to deceive the very elect. The finer methods of diagnosis, such as Erlich's diazo-reaction and the Widal test, are not of much value, since in regard to the former, it is known to be present in pneumonia, while it would appear from this report that the serum reaction, often delayed, may be constantly absent even until death. It is an interesting question whether certain concurrent infections do not modify the typical characteristic Widal reaction. Dr. Fisher's diagnosis in each case found ample confirmation in the autopsy examination, although in No. I., on the 16th day of the disease there was a weak Widal reaction, while it was absent on the 18th day. In case IV. no such reaction was obtained.

In Dr. Fisher's interesting paper he points out:—

- (1) That the complication is not very unusual, occurring in 3.6 per cent. of the cases.
- (2) That in many cases the pneumonia is due to a mixed infection.
- (3) That it is very fatal, about 77 per cent. of all cases dying.
- (4) That it is more common since the cold bath treatment although less fatal.
- (5) That the sharp pain in the side and rusty sputum are seldom observed.

### Paget's Disease.

FREDERICK PACKARD, M.D., J. DUTTON STEELE, M.D., THOS. S. KIRKBRIDE, JR., M.D. "Osteitis Deformans (Paget's Disease)." *American Journal of the Medical Sciences*, Nov., 1901.

This article jointly prepared, although brought to a conclusion by Drs. Packard and Steele owing to the demise of Dr. Kirkbride, contains a careful study of this rather rare affection which was first described in 1877 by Sir James Paget.

The results of their studies in their own case and in the literature are arranged under two heads: (A) from the clinical standpoint, and (B) from the pathological standpoint.

#### (A.) From the clinical standpoint.

(1) Besides our own case, 66 true cases of osteitis deformans are found in the literature.

(2) Osteitis deformans is a distinct disease of obscure etiology, but possibly allied to, although not identical with, osteomalacia fragilitas ossium and acromegaly.

(3) The disease is one of later adult life. The earliest onset was in the 21st year of life. Of the 67 cases, 61 per cent. occurred in males. Trauma seems to play some part in the etiology, while there appears but little evidence for family tendency.

(4) There is a striking resemblance in the features of subjects of the disease, in enlargement and forward projection of the head, dorso-cervical kyphosis, prominence of clavicles, spreading of the base of the thorax, diamond-shaped abdomen crossed by a deep sulcus, relative increase in the width of the hips, and outward and forward bowing of the legs.

(5) The bones most frequently affected are those of the cranium, the tibiæ and femurs, and the deformity is usually first noted in the cranium and tibiæ. The left side seems to have been the part first involved; sometimes, however, the enlargement was crossed in its distribution.

(6) The association with malignant disease would seem to be not quite so frequent as is usually stated.

#### (B) From the pathological standpoint.

(1) Osteitis deformans is a disease affecting the skull, vertebræ and certain of the long bones. Its essential characteristics are:—

(a) Absorption of the compact substance, causing enlargement and confluence of the Haversian canals.

(b) Formation of new bone, which runs diffusely through the affected and adjacent healthy portions. This new bone remains uncalcified and is in turn re-absorbed.

(c) The conversion of the medullary substance into a vascular connective tissue containing fat cells, giant cells and leucocytes. In a small proportion of the reported cases, cysts filled with the gelatinous material and giant-celled sarcomata occur in the medulla.

(d) As a consequence of the three processes the ordinary relations of the compact substance and medulla are destroyed. The bones become exceedingly thickened and asymmetrical but since the new tissue remains uncalcified, its elasticity permits of great deformity of the long bones from the weight of the body, and fractures do not occur.

(2) The whole picture of osteitis deformans, from its pathological aspect, is so very characteristic that it must be considered a distinct disease, and its pathological diagnosis correspondingly easy.

(3) The etiology of the condition is as obscure as when Paget first described it. Some predisposing tendency, probably trophic, must be assumed, and the exciting cause may be mechanical:—in the skull, extremes of heat and cold, and in the vertebræ and long bones the ordinary traumata to which these bones are exposed. Lesions of the nervous system are inconstant and rare, and are probably not a causal factor.'

#### **Treatment of Phthisis by Electricity.**

CHISHOLM WILLIAMS, F.R.C.S. Ed. "The Treatment of Phthisis by means of Electrical Currents of High Frequency and High Potential." *Brit. Med. Jour.*, Oct. 12, 1901.

There is promised in this paper a new era in the treatment of pulmonary tuberculosis, as well as the prolongation of life to many so afflicted, without that isolation so irksome and so depressing to many such patients. Dr. Williams in a few words lays before the profession the results of his treatment of 43 cases of pulmonary tuberculosis in the most overcrowded and unhealthy parts of London. Those who would adopt the method herein described must look further than this article for a satisfactory description of the technique, although it contains a comprehensive statement of Dr. Williams' appliances.

The cases were all picked by other medical men for the severity of their symptoms. The effects were almost without exception most helpful. Forty-two of the patients put on weight, lost all their symptoms, except in a few where slight cough remained, and a few bacilli are found occasionally. After the treatment is begun, the temperature is seen to rise after each application or sitting, and when the prognosis is good this reaction does not recur, normal temperature being maintained after the high frequency currents are applied. The cough, and indeed all the symptoms, are marvellously relieved under this treat-

ment. Attention is given to diet and fresh air as much as possible in their surroundings.

This treatment may be adopted at home and by all practitioners who have an efficient X-ray apparatus. The duration is about three months in severe cases. During the first month daily applications are made, second month, every other day, and third month twice a week.

### **Enteric Fever in a Military Hospital.**

H. D. ROLLESTON, M.D., F.R.C.P. "Notes on Enteric Fever at the Imperial Yeomanry Hospital, Pretoria." *Brit. Med. Jour.*, Oct. 5, 1901.

Notes on typhoid fever are always of interest and those here presented by Dr. Rolleston set forth some of the features of the disease as it developed in those under the stress of war in a new country. Altogether the writer reports that 681 cases were treated in that hospital; many of the patients, however, went there for convalescence, while some left for other institutions for the same purpose, so that this large number is reduced to 244, whose reports alone are available.

Among the features of difference found in the African enteric fever, Dr. Rolleston points out that numerous cases of second attack of typhoid were seen in the present campaign. Relapses occurred in 21 per cent. of cases, double that in Osler's statistics. The study of the incidence of enteric fever in those individuals inoculated, as well as the course of the disease when it did occur, is an important contribution to our knowledge on this subject. Inoculations with antityphoidal serum had been practiced upon 54 individuals among the personnel of the hospital and military officers. Although the numbers are too small for any reliable conclusions on this subject, yet the author with this in mind remarks, that (1) antityphoidal inoculation does not absolutely protect against a future attack of enteric fever, (2) when enteric occurs in an uninoculated person there is as a rule at least six months, (3) inoculation protects against a fatal termination to the disease.

In treating of the onset of typhoid fever in Pretoria, it is shown that this is not infrequently quite sudden. Dysentery seemed to be a forerunner in a certain number of cases. Diarrhœa was decidedly exceptional; a rapid pulse rate was not uncommon, even in the cases running a favourable course. This appeared to be connected with the continuous hard work involved in "trekking" previous to the onset of the fever.

Hæmorrhage from the bowels occurred in 8.7 per cent. of the cases, or 21 cases among the 244. The fatalities in these cases was high, 76 per cent. In this connection it is interesting to note that in some of



these the rose spots were purpuric. Perforation of the intestine was curiously rare, and only one occurred in one case. The commonest sequela was phlebitis, although definite statistics on this point are not to hand. The undue frequency of this sequela may be explained by the absence of fresh vegetables from the diet, or by the hypothesis that the veins of the leg owing to the fatigue during the marching, were more readily diseased.

Nerve symptoms were rare; respiratory complications occurred as follows:—bronchitis was rarely observed; pneumonia, four cases, two of which were fatal; pleurisy was not uncommon; arthritis was rare and joint pains occurred more frequently. There was one case of myositis which was localised in the extensor brevis digitorum of the right foot. Parotitis occurred in three cases. In three cases the testes were inflamed, and in one of these an abscess with rupture occurred. Jaundice was observed in but one case, while solitary abscess of the liver occurred in but one case. In but one case in which there had been incontinence of urine, numerous subcutaneous abscesses developed.

#### **General Infection in Gonorrhœa.**

ULLMANN, DR. HANS. "Ueber allgemeine infection nach Gonorrhoe." *Deutsch. Archiv. f. klinische Med.*, 1901, *LXIX*, p. 302.

WARD, ARTHUR H. "On Generalised Infection in Gonorrhœa." *Brit. Med. Jour.*, Vol. II, p. 755, 1901.

Among much that has been written upon gonorrhœa during the current year, these two articles stand out as setting forth the most important characteristics of this disease from the general infection point of view, while at the same time each article seeks to emphasize some special points. For example, in Dr. Ullmann's article attention is directed to the prostate as a structure to be carefully examined in all cases of "cryptogenetic septicæmia" in men. In four of the five cases which this writer reports the prostate was the seat of abscess formation. In the fifth case a local (urethral) gonorrhœal infection was rapidly followed by chill, polyarthritis, which was most severe in the left hip. Within a few weeks death ensued under manifestations of a septicæmic process in which the endocardium and pericardium were involved. An autopsy confirmed the diagnosis. No purulent metastases were found.

Mr. Ward's thesis is as follows:—"The gonococcus in its process of growth in the human body produces an irritating toxin. This toxin is the direct cause of all the symptoms of the disease. In all cases it is absorbed into the system where its presence causes systemic degenerations of varying degrees of severity. Gonorrhœa is thus a general

toxæmic affection, but the microbes which form the toxin are generally localized in or around a mucous tract. The microbic invasion may extend to the organs communicating with the infected tract, or it may penetrate into the tissues either by direct extension, or by a process of growth through the tissues affected."

Dr. Ward further states that invasion is rendered possible by the paralyzing effects upon the leucocytes wrought by the toxins absorbed in advance of the microbe preventing encapsulation. Wherever the micro-organisms become stranded in the peripheral capillaries there development of inflammation takes place and more toxin is produced. The invasions already referred to are favoured in many instances by the energetic early treatment chiefly in the urethra.

Mr. Ward's article is replete with references to the most important work done to support his thesis, and no abstract could do it justice. In speaking of treatment gentleness is enjoined upon all who are called upon to deal with early gonorrhœal infections of the urethra. High pressure injections, abortive antiseptics and instrumentation are all prohibited. When infection is found to have become general, as it does according to the best authorities in from 1.5 to 2.8 per cent. of the cases, Mr. Ward would recommend quinine as that drug which holds out the best hope of benefit. In the event of failure, resort to mercury, arsenic or the salicylates. Oxidation and elimination of the toxins is indicated when toxic degenerations are threatening. "Potassium iodide with quantities of water with the idea of washing out the soluble poison, together with baths, massage and change of air."

*W. F. Hamilton.*

## Gynaecology.

UNDER THE CHARGE OF WILLIAM GARDNER.

### Pregnancy Complicated by Tumours.

CUMSTON, C. G. "Fibroids and Pregnancy." *Amer. Gyn. and Obstet. Jour.*, Oct., 1901.

When pregnancy occurs in a uterus which is the seat of a fibroid growth, abortion usually occurs, set up by hæmorrhage which is the result of the pathological condition of the endometrium, or by inability of the uterus to properly increase in size.

Where, in addition to the presence of the tumour, the uterus is retroverted, both mother and child are placed in imminent danger at the time of labour on account of transverse presentation occurring or of actual blocking of the passage by the growth. Another instance of the danger caused by these tumours is where a large one fills the abdominal cavity and is pushed up against the diaphragm by the enlarging uterus, thus producing compression of the abdominal viscera. Delivery in such a case is apt to be followed by dangerous hæmorrhage or suppuration.

Treatment resolves itself into (1), induction of premature labour; (2) enucleation of the growth per vaginam or through the abdomen during pregnancy; (3) Porro's operation and total extirpation of the gravid uterus. Of these methods of treatment Cumston disapproves of the first in any case. Where the fibroid is a polypoid of the cervix, it may be removed during the progress of gestation, but where the growth is of the subserous variety no general rule can be laid down in regard to treatment, each case being a law unto itself. The choice of total hysterectomy should be made in preference to supravaginal amputation in two cases, first where the fibroid growth affects the cervix and, second, where there is a septic process going on in the uterus. The presence of a fibroid during the puerperium increases the danger of hæmorrhage, necrosis or suppuration.

### Pelvic Infection.

ALLABEN, J. E. "Infections of the Soft Tissues of the Female Pelvis; Diagnosis and Treatment; Report of Cases." *Amer. Gyn. and Obstet. Jour.*, Nov., 1901.

The micro-organisms in these cases are (1) the gonococcus, (2) the

streptococcus, and (3) the staphylococcus albus and aureus; and their usual place of entrance is the vagina. These produce pelvic abscesses, that is, any suppurative condition of the soft tissues of the pelvis.

Infection by the gonococcus is much more commonly met with than that by any other organism, and the inoculation is usually affected by sexual intercourse; while infection by the streptococcus or staphylococcus occurs during the management of an abortion or of a confinement, or else the poison is introduced by an examination conducted with unclean instruments. The two latter organisms set up the most virulent form of disease.

The diagnosis of the character of the infection is not difficult to make. In gonorrhoeal infections the history of vaginal discharge, etc., will usually guide one. The pulse is rapid but otherwise good, and the temperature varies from normal to 102 to 103° F. Streptococcus infection is more serious from the first. One gets a history of abortion, confinement or intra-uterine instrumentation. The patient often has a chill followed by a temperature of from 101 to 105° F., with a rapid, soft and feeble pulse. Recovery is slower and much more uncertain than in gonorrhoeal infection.

The treatment is expectant or radical, the former consisting in rest, morphine, salines and antiseptic hot douches, but more radical measures are usually requisite. Where the condition is acute and masses can be distinctly felt per vaginam, vaginal puncture and drainage are indicated; but where the condition is more chronic the masses should be removed through the abdomen.

#### **Genital Carcinoma.**

MILLER, C. J. "Carcinoma of the Female Urethra." *Amer. Gyn. and Obstet. Jour.*, Nov., 1901.

Cancer of the urethra is a rare disease and is more infrequent in the female than in the male. When present it is usually of the squamous type. The primary form arises from the epithelium and the glands of the floor of the urethra, and becomes either a pedunculated or an ulcerated structure. Where it is peri-uterine it spreads, not to the surface of the urethra, but all around this structure, converting it into a rigid tube which bleeds readily upon touch.

Lymphatic infection is early and operation is limited to early cases on account of the involvement of important organs, and even when seen early the total removal of the urethra and base of the bladder gives the only hope of cure. When too late for this the formation of a vesico-vaginal fistula may be required to relieve the difficulty of micturition caused by constriction of the urethra.



**Genital Tuberculosis.**

BEYEA, HY. D. "Tuberculosis of the Portio Vaginalis and Cervix Uteri, Its Pathological Diagnosis and Treatment." *Amer. Jour. Med. Sciences*, Nov., 1901.

The patient of the author was 25 years of age and had a family history which was free from tuberculosis. Menstruation began when she was 18 years old and had been scanty and irregular, only coming on every two to five months. Profuse and offensive leucorrhœa had been present for about three years. Since puberty she had felt attacks of pain in the left groin, the attacks being quite independent of menstruation but aggravated by exercise. She had gradually failed in health from her 19th birthday. Two weeks before admission, she was seized with severe pain in the left side of the abdomen, backache, frontal headache and pains in the legs. She also had fever and a rapid pulse.

On making an examination of the genitalia the cervix and upper part of the vagina were found to be the seat of tuberculosis. The treatment adopted was curetting, high amputation of the cervix, and removal of both ovaries and tubes. This was followed by great amelioration of her condition, and six months after the operation she had gained several pounds in weight.

This made the 69th case of this rare disease collected by the author, 30 of which were from post mortem records, where the tuberculous disease had seriously affected other parts. The age varied from 17 to 79, but that of greatest sexual activity, viz., from 21 to 30, showed the greatest liability to it. In 19 cases the disease was confined to the portio vaginalis and in 6 to the cervical canal. In the rest both regions were affected.

The disease may be clinically divided into three varieties. (1) Tubercular ulceration of the cervix; (2) tubercular papillary hyperplastic endocervicitis; and (3) miliary tuberculosis of the cervix.

The treatment is operative, but if there is at all extensive disease in other parts of the body nothing should be attempted to cure the local condition. If the disease is entirely local, complete hysterectomy should be carried out; but where it is especially confined to the cervix and corporeal endometrium, curetting and amputation of the cervix have been known to cure.

*F. A. Lockhart.*

## Pharmacology and Therapeutics.

UNDER THE CHARGE OF A. D. BLACKADER.

### On the Treatment of Diabetes Mellitus.

WILLIAMSON, R. I.—“On the Treatment of Diabetes Mellitus.” *The Medical Chronicle*, August, 1901.

In trying to form an opinion as to the value of any method of treatment in this disease, it is important to bear in mind that occasionally in some of the milder cases the sugar excretion may for a time disappear, apart from any influence of diet or drugs; also that the occurrence of complications such as phthisis, nephritis, etc., may cause a marked diminution in its excretion which, if care be not exercised may appear to be the result of treatment. Furthermore, it is important to distinguish between the results due to diet and those due to drugs. For therapeutical purposes three forms of the disease are recognized:—

1. The mildest form, in which the sugar excretion ceases when a rigid diet is given—these cases are to be distinguished from those of temporary glycosuria by the persistence of the excretion.

2. The more severe form in which the sugar excretion does not cease on a rigid diet.

3. The most severe form in which not only does a rigid diet fail to arrest the sugar excretion, but in addition the urine gives a dark brownish red coloration with perchloride of iron. In this form there is great danger of coma developing.

This classification of cases is not a scientific one but is a very practical one for treatment. Before prescribing, it is also important to examine the lungs for signs of phthisis, especially in the 2nd and 3rd forms and to examine the heart for signs of dilatation or other disease, especially in patients of more advanced age.

The weight of the patient should also be taken and a record kept of it at regular intervals. In Dr. Williamson's opinion the weight of the patient is even a more important guide in carrying out treatment than is the exact amount of sugar excreted.

In prescribing a dietary, Continental physicians have endeavored to calculate the value of the various food ingredients in calories; according to the rule that 1 gm. of proteid equals about 4 calories; 1 gm. of carbohydrates equals about 4 calories; 1 gm. of fat equals about 9 calories.

From the total value of the diet in calories thus estimated the value

in calories of the sugar loss is subtracted and the remainder should be not less than 2,300 calories, the amount required daily by a healthy man. Such an estimation may be of service in indicating when the diabetic diet is deficient, but there are reasons for believing that such an estimation is not quite so scientific and valuable as at first sight may appear.

In commencing the dietetic treatment of diabetes a very rigid diet of nitrogenous and fatty food is prescribed at the outset to ascertain whether it is possible to arrest the sugar excretion thereby. This is useful in the first and second forms of the disease, but in the third form, in which the urine gives a reaction with perchloride of iron, it should not be tried lest with a too rigid diet coma may supervene. Although a careful diet will cause the sugar excretion in the mildest cases to cease, in some the addition of even the smallest quantity of carbohydrates to the diet will induce a return of the sugar excretion, while others will be found to tolerate a certain amount of the carbohydrates and in such cases it will be necessary only to restrict the diet sufficiently to prevent the excretion of sugar. It is also found that sometimes after an arrest for a short time by a rigid diet that the patient can tolerate more and more carbohydrate, but in others again, even after a prolonged period of rigid dieting the addition of a small amount of bread or other carbohydrate, will bring back the glycosuria. In such cases should the patient on a rigid diet be found to lose weight rapidly, it will be necessary to relax and to be content if by moderate restriction we can keep the daily excretion of sugar down to about 500 grs. In the second form the diet demands much care; if it is found that on a rigid diet the sugar excretion remains abundant and the patient's general condition becomes worse, a certain amount of carbohydrate food must be allowed in the form of ordinary bread and milk, fatty food, and especially cream and butter.

With regard to the third form Dr. Williamson emphasizes Ebstein's rule that the appearance of a perchloride of iron reaction in the urine is an indication for diminishing the albumin and increasing the carbohydrates in the diet. In this form fatty food is especially indicated, and a small quantity of spirits may frequently be of service in aiding its digestion. Milk contains about 4 per cent. of objectionable milk sugar, but also much valuable fat and albumin; cream contains less milk sugar and seven times the amount of fat, and therefore may be allowed freely in all forms of diabetes. Dr. Williamson has prepared an artificial milk, pretically free from sugar, which he says may be taken in unlimited quantities by diabetic patients in all forms of the disease. Four tablespoonfuls of cream are added to a pint of water



and well mixed, the mixture is allowed to stand in a cool place and at the end of twelve hours the fat of the cream will have floated to the surface and can be skimmed off, to this are now added, water, the white of an egg and a little salt, and, if desired, a trace of saccharine. By practice an artificial milk can thus be prepared modified to suit the patient's tastes.

In preparing the dietary for diabetes it is to be remembered that of the various carbohydrates starch is less injurious than sugar; fruit sugar is less injurious than cane and grape sugar, but fruit which contains much sugar should as a rule be forbidden. Bread is the article of diet which gives the greatest difficulty when a rigid diet is demanded. The substitutes usually employed are often unreliable and their taste disagreeable. Dr. Williamson prefers to have the bread substitute prepared in the patient's house or in the hospital, as being less expensive and more reliable. The following are, in his opinion, the most useful: Gluten, Soya biscuits and bread, almond cakes and cocoanut cakes. The directions for preparing these are as follows: 4 oz. of almond or cocoanut flour mixed with a little water and German yeast, the mixture is allowed to stand in a warm place for about 20 minutes, an egg is then beaten up and a little water added, and the whole made into a paste. This is divided into cakes and cooked for 15 or 20 minutes. Ebstein recommends Aleuronat as an excellent substitute, and Dr. Williamson says that he has found that from mixed aleuronat and cocoanut powder very palatable cakes can be easily prepared. His directions are:—2 oz. of desiccated cocoanut powder mixed with a little German yeast and water and kept in a warm place for about 20 minutes, then 2 oz. of aleuronat are added and one egg and a little saccharine solution. The whole is well mixed, divided into cakes and baked. When freshly prepared they are said to be very palatable, but by keeping, the taste may become unpleasant. Recently Ebstein has recommended another vegetable albumin, Ergon, an albumin from rice, and Pickardt has employed Roberat, an albumin derived from corn. All these may be used in the preparations of puddings and other articles of food for diabetic patients. For the relief of thirst dilute acid drinks are preferable to beer.

The patient should be relieved of mental anxiety and worry as much as possible and the hours of work, business, or study should be diminished; a holiday with complete rest from work often has an excellent effect on such patients. While in the mild form open air exercise may be of service, in the more severe forms vigorous exercise is injurious, and the fatigue induced by long railway journeys may be dangerous. It is well known that marriage has a most injurious effect on diabetic patients.



In reference to the medicinal treatment of diabetes Dr. Williamson says opium, morphine, and codeine have been shown to have a beneficial action in some cases, diminishing the sugar excretion ; but in the more severe forms these drugs rarely do much good, while they generally give rise to a most obstinate constipation. Heroin hydrochloride has also been tried and found in a few cases of some benefit but in others it gave rise to severe vomiting. The drug from which Dr. Williamson obtained his best results was sodium salicylate, strongly recommended by Ebstein many years ago. Dr. Williamson writes : "In some cases I demonstrated clearly by repeated trials that sodium salicylate has a marked action in decreasing the sugar excretion apart from any restriction of diet. Sodium salicylate, however, does not usually produce any marked diminution in the severer forms of the disease and it is not advisable to give it if serious complications be present or if the patient appear to be losing ground rapidly. The drug requires to be carefully watched as fairly large doses are necessary to produce decided results. Dr. Williamson commences with ten grains three, afterwards four, times a day and increases this amount slowly up to fifteen grains four or five times a day watching carefully for toxic symptoms and discontinuing the drug if these appear. In a few cases recently I have employed the new compound known as Aspirin with good results.

In the more severe forms of the disease when the urine gives the brownish red coloration with perchloride of iron, Dr. Williamson has obtained benefit from the use of sodium bicarbonate in large doses, 200-400 grains daily, if coma is threatening he has given as much as 900 grains in the 24 hours. He adds that it is remarkable how well such large quantities of sodium can be taken by diabetic patients. It may be given either in large quantities of ordinary drinking water, in soda water, or in milk. In these severe cases it is very important to keep the bowels open by the use of some mineral water ; at the same time any circumstance which might tend to increase this complication should be avoided, such as fatigue and anxiety and sudden change of diet.

#### **On the Treatment of Croupous Pneumonia.**

WILSON, JAMES C.—"On the Treatment of Croupous Pneumonia."  
*Philadelphia Medical Journal*, Nov. 2nd, 1901.

Nearly half a century ago Trousseau, the greatest clinician of France since Laennec, wrote "Pneumonia is not uniform in character ; the forms which it assumes, its intensity and extent, the influence of the prevailing medical constitution, the personal specialities of the patients

in respect of age, sex, temperament and previous health, the diseases which may complicate it and the unfavorable conditions which may supervene during its course, all demand particular enquiry on the part of the physician." Since then, both medicine and therapeutics have undergone many revolutions and made great advances, but the facts observed by the bedside remain the same. The high mortality in certain localities and years, the comparatively favorable course elsewhere and in other seasons, the resistance manifested in early adult life, the helplessness of old age, the unfavorable influence of previous disease and alcoholism, the disastrous effects of complications, and the fact that croupous pneumonia is frequently a terminal event in many chronic diseases, and in most healthy persons of advanced age, are recognized by all as familiar and abiding truths. The uniformity of the symptom-complex in well developed frank pneumonia is no less remarkable than the diversity of its manifestations in cases of aberrant type. Such facts are not only the cause of much diversity in therapeutic indications, they are likewise the cause of a most bewildering diversity and perplexity in the therapeutic conclusions. Thus Petrescu, after an experience of 13 years with enormous doses of infusion of digitalis in a series of 1,192 cases, reported a mortality of 2.66 per cent., while 500 cases from the recent records of the Pennsylvania Hospital, (May 1897 to August 1901,) treated upon the expectant symptomatic methods, showed 125 deaths, or 25 per cent. Are we to conclude from the comparison of these figures that the treatment of pneumonia with large doses of digitalis which created such excitement when first announced, is so much more efficient than the expectant symptomatic plan, or that this difference in the result is to be explained by difference in the treatment alone? The observations of Petrescu were conducted in the military hospital upon selected cases, young strong men in previous good-health, under proper hygienic conditions and free from alcoholism; the cases at the Pennsylvania Hospital occurred in persons of that class who seek such an institution only from necessity, many of whom were actually destitute, others overworked, badly nourished, aged, and addicted to alcohol. Of 34 of these cases known to have been drunkards, 23 died, a mortality of 67 per cent. The results of treatment as modified by age is especially interesting, the larger number, namely 136, occurred in the third decade with 25 deaths, a mortality of 18 per cent. In the succeeding decades with a decreasing number of cases the mortality rises rapidly and in the fourth reaches 26 per cent., in the fifth 43 per cent., in the sixth 53 per cent., in the seventh 77 per cent. These results may be compared with those of Aufrecht who in 377 cases of pneumonia between 5 and 20 years, all hospital

patients, had a mortality of 2.64 per cent., and of Riessell, who in 127 persons between 20 and 30 years of age had only 2 deaths, a mortality of 1.8 per cent. Neither of these used the digitalis treatment. Pel of Amsterdam in a recent article writes, "Although the admirers of the digitalis therapy furnish cases of pneumonia which have recovered with large doses of digitalis, they have failed to prove that it was just this heroic use of the remedy which caused the favorable termination."

More than any other disease croupous pneumonia demands a very large series of cases to establish the efficacy of any line of treatment.

In regard to specific treatment, Pel calls attention to the fact that we know four infectious diseases in which we are able to meet the causal indication by Maeb medication; malaria by quinine alone, syphilis by mercury and the iodides; rheumatic fever by the salicylates and analogous substances; and diphtheria by its antitoxin. It would be a remarkable fact if croupous pneumonia, a disease due to a specific micro-organism should yield to treatment by a number of different drugs, such as the salicylates, iodides, quinine, mercury, creosote and carbolic acid; certainly it does not seem desirable to repeat the futile experiments already made in regard to pulmonary tuberculosis, scarlet fever and other acute infections. The effect of indifferent antiseptics and germicides upon parasitic micro-organisms must be at a definite relation to the masses of the circulating blood in which they are diluted and which may be roughly estimated as from 12 to 14 pints in the adult. Experience has shown that the parasite is equally as tolerant of their action if not more so than the host. "By their use we diminish the prospect of cure since we complicate the disease with the effects of a poison." With specifics like quinine in malaria the case is wholly different. In croupous pneumonia it is probable that the pathological process is fully established upon the occurrence of the chill and that the pulmonary lesion is far advanced before a positive diagnosis can be made. The pneumo-toxines produce the initial chill, the fever, and the prostration. Dr. Wilson's remarks are in opposition to Aufrecht's advocacy of quinine (Nothnagel's System), which has recently excited interest. This observer's statistics, extending over a period of ten years, show that during the last two years under quinine treatment the mortality fell to 6.6 and 8.2 per cent., although in former years it fluctuated between 9.8 and 25 per cent. The favorable effect from the use of such drugs as indicated by mortality statistics is, however, more apparent than real, since wide variations in a short series of cases are constantly encountered. Nevertheless, it must be conceded that thoughtful researches in the direction of specifics are justifiable. Clinical experiments with antipneumococcus serum have not yielded



satisfactory results. Dr. Wilson's observations in the German Hospital did not encourage him to continue its use ; nor was his experience with hydrotherapy more satisfactory, in regard to its effect either upon the immediate course of the disease, or upon the death rate. Dr. Wilson details the general course of treatment pursued in the service of the German Hospital as follows:—

A calomel purge is commonly administered shortly after the patient is admitted to the ward; if there be nausea and vomiting the drug may be given in fractional doses; but in the absence of these symptoms a single laxative dose is administered and if necessary followed by a saline. Early in the course of the attack two or three large flat icebags are applied to the affected side; they relieve pain and add to the comfort of the patient. In addition, if the temperature exceed 104° F., cold sponging may be repeated at intervals of two or three hours, but under ordinary circumstances the sponging takes place only at night and morning with water, the temperature of which is regulated by the sensations of the patient.

The diet consists chiefly of milk and light broths; in private practice sometimes ice cream and raw or stewed fruit may be allowed; water is given in abundance but not more than 2 oz. at any one time. Alcohol is given in the majority of cases; in general the amount does not exceed 4 or 6 ozs. in the 24 hours, but larger quantities are given to those accustomed to its use. If there be great pain morphine is administered hypodermically. In any case Dover's powder in the form of tablets of 2 or 3 grains is administered every two or three hours throughout the greater part of the course of the attack, the dose is so regulated as to produce a slight continuous drowsiness from which the patient may be readily aroused. By this means suffering is diminished, cough to some extent controlled and the excitement and apprehension common in pneumonia are allayed. Dr. Wilson states that no evil effects have been attributed to this use of opium.

Towards the close of the attack, Dover's powder is given with increasing frequency ; expectorants are rarely employed ; aconite and veratrum viride are never given and digitalis only when the pulse becomes small and frequent, and especially if it become irregular. It may then be given in full doses, but Dr. Wilson has in many cases found that strophanthus answered better; strychnine may also be given as a cardiac stimulant and the nitrites, especially nitro-glycerin to relieve a laboring right ventricle. If these measures fail and signs of failure of the right heart supervene such as the development of small mucous râles with cyanosis, venesection is practiced. In some cases of pulmonary oedema atropin has been given hypodermically and has many



times appeared to avert the fatal issue. Dyspnoea is regarded as an indication for the use of oxygen, care being taken that in its administration it is freely diluted with air. Nervous symptoms and delirium are to some extent controlled by the systematic administration of Dover's powder. Their appearance demands an increase in the quantity of alcohol and the application of ice to the head. In young robust individuals delirium tending to pass into coma has been treated successfully by cold affusions to the head and neck repeated at intervals of three or four hours. Neither poultices nor cotton jackets are allowed. Blisters are not used unless resolution is delayed, when a series of small fly blisters may be applied. At the crisis the patient is carefully watched. If the Dover's powder has been discontinued, a hypodermic injection of morphine or an opium suppository may sometimes be administered with benefit. In some cases ammonium carbonate, alcohol or hot coffee appears to be indicated. Collapse is very rare. During convalescence an abundant nutritious diet is given. The patient is permitted meat as soon as he desires it, but Dr. Wilson is in no haste to yield to the patient's wish to allow him out of bed.

*A. D. Blackader.*

## Reviews and Notices of Books.

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**HUMAN PHYSIOLOGY.** Prepared with special reference to students of medicine. By JOSEPH HOWARD RAYMOND, A.M., M.D., Professor of Physiology and Hygiene in the Long Island College Hospital, etc. Second edition, entirely rewritten and greatly enlarged. Philadelphia and London, W. B. Saunders and Company, 1901. Canadian Agents, J. A. Carveth & Co., Toronto, Ont. Price, \$3.50 net.

This book contains a great number of valuable abstracts of recent papers on physiology and allied subjects, special prominence being given to those having a direct bearing on pathology and practical medicine. Among the interesting questions taken up we may mention : the food value of alcohol, the effect of removal of the human stomach with illustrative cases, the rival glycogenic theories of Claude Bernard and Pavy, recent suggestions on improved army rations, photography of the larynx and its bearing on theories of voice production.

The book is well printed and attractively illustrated, and as an applied physiology for medical practitioners or even as a handy book of reference for teachers of physiology, it is entitled to much praise and we do not hesitate to recommend it.

There is, however, another point of view from which to regard the book, namely, that of the medical student, for whom it claims to be written. For his purposes the matter is not sufficiently digested, and in order to make room for the numerous abstracts of recent work to which we have referred, those portions of physiology which we are accustomed to look upon as fundamental have been too often omitted or lightly touched upon.

In the nervous system, the writer clings to the unhappy suggestion of Schaeffer, of applying the term "neuron" to the axis cylinder process instead of to the whole cell. A distinction is made between dendron and dendrite, which is scarcely justified by current usage. The course of nerve impulses is not given with sufficient fullness for medical students. For instance, in describing the pyramidal tracts a jump is made from the cerebral cortex to the pyramids without explaining how these are connected. The nervous control of circulation is most inadequately treated. No reference whatever is made to the cause of the heart beat. The account given of the nervous control of respiration is scarcely in

accord with recent views. Para-peptone and pro-peptone are incorrectly classed with the true peptones. Such statements as that methæmoglobin is also called reduced hæmatin, and that Fick's spring manometer is called a myograph, must surely be misprints.

Sufficient has been said to indicate that while we can recommend the book to those in search of a convenient résumé of recent work, we do not consider it by any means the best text-book for students.

W. S. M.

**THE READY REFERENCE HAND-BOOK OF DISEASES OF THE SKIN.** By GEORGE THOMAS JACKSON, M.D. (Col.), Chief of Clinic and Instructor in Dermatology, College of Physicians, New York, etc., etc. Fourth edition, thoroughly revised. Lea Brothers & Co., Philadelphia and New York, 1901.

The fourth edition of Jackson's dermatology does not differ in any essential from previous ones. The book has been thoroughly revised to bring it up to the most recent work on dermatology, and this has necessitated the addition of a dozen new diseases or varieties of disease. The author still believes in retaining the alphabetical arrangement of his subject matter rather than in following any system of classification, but he has inserted Crocker's modification of Hebra's classification. While there is much to be said in favour of the alphabetical arrangement in the present state of our knowledge, we cannot help thinking that even a faulty grouping of the various diseases is better for the student for teaching purposes, and for this reason we cannot commend the book for undergraduates' use. Of the new sections added, many are of so-called new forms of disease which have been reported in recent dermatological literature by various writers, and which in time will no doubt be found to be but varieties of some of the well-known forms; others, again, are tropical parasitic diseases which are only seen in the habitat of their particular parasite. The addition of these latter makes the work much more complete in its avowed object as a reference handbook.

**THE MEDICAL NEWS VISITING LIST FOR 1902.** Seal Grain Leather, Lea Brothers & Co. Philadelphia and New York.

**THE PHYSICIAN'S VISITING LIST (LINDSAY AND BLAKISTON'S) FOR 1902.** Fifty-first year of its publication. Philadelphia, P. Blakiston's Son & Co.

The visiting list has become a necessity now to every practicing physician and the enterprise of the publisher has adapted it to the wants of every one by issuing a variety of styles.

The Medical News Visiting List is issued in four styles, viz., weekly,

dated for 30 patients ; monthly, undated for 120 patients per month ; perpetual, undated for 30 patients weekly per year ; and perpetual, undated for 60 patients weekly per year. It contains the usual tables likely to be found useful, such as : Diseases with approved remedies, Doses, Examination of Urine, Artificial Respiration, Incompatibles, Poisons and Antidotes, etc., etc. The book is leather bound in a wallet-shaped book with a pocket, pencil and rubber.

The List issued by Blakiston can be had in the regular, perpetual, and monthly editions. The regular edition is arranged for from 25 to 100 patients per week in yearly or half-yearly volumes. The perpetual and monthly editions are undated and can be started at any time, and in the latter the patient's name only requires to be written once each month. The List contains besides the usual tables of Doses, a Comparison of metric and apothecaries weights and of Centigrade and Fahrenheit thermometers, and one for Calculating the Period of Utero-Gestation, etc., etc. The List is neatly bound in black leather in a wallet-shaped book with a pocket pencil and rubber.



THE  
**Montreal Medical Journal.**

*A Monthly Record of the Progress of Medical and Surgical Science.*

EDITED BY

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THE EARLY DIAGNOSIS OF MASTOID DISEASE.

Disease of the mastoid following suppurative otitis media is by no means infrequent and so serious in its nature when it does occur that every medical practitioner should be as familiar with the practical considerations involved in the management of these cases as he is with any of the ailments he is liable to meet with in the course of ordinary work. Mastoid disease is well known to occur at any time in the course of a chronic suppurative otitis media, but as most of these cases present complex conditions which are beyond the scope of general practitioners, the writer will confine his remarks to a consideration of those mastoid complications which are the immediate sequel of ordinary acute suppurative otitis media.

Of these, there are two distinct classes: *viz.*, those in which the discharge from the middle ear continues uninterruptedly, and those in which the discharge through the meatus from the middle ear has ceased for days or weeks, without perfect recovery from the local and general symptoms.

In regard to the first of these, if a profuse discharge from the ear continues for many days and is associated with pains in the mastoid

region, and perhaps some swelling or œdema of the overlying tissues and tenderness on pressure behind the ear, or at apex of mastoid or about its posterior border, and especially if there be neuralgic pains extending from the ear upwards over the side of the head, or into the corresponding temporal region, it may be regarded as reasonably certain that the mastoid antrum and adjunct cellular spaces are involved in the suppurative processes. It is always an ominous symptom if pain in the ear and adjunct parts continues, or recurs after rupture of the membrana tympani has occurred in the course of suppurative otitis media; and this symptom in itself nearly always indicates involvement of the mastoid. In some cases the discharge from the ear becomes scanty but the mastoid symptoms continue.

In the second class of cases the acute ear symptoms have subsided, and discharge from the ear has ceased altogether, or only occurs occasionally. The patient does not recover his usual health but has a sallow, hollow-eyed, worn, listless appearance, and suffers from neuralgic pains radiating from the middle ear or mastoid. Deafness and sometimes vertigo and insomnia are present, but there are several local symptoms which help to establish the diagnosis. The most constant of these is redness with crowding down of the inner part of the superior and posterior walls of the meatus, so as to distinctly narrow the canal in this situation. Tenderness on pressure over the supra-meatal triangle is the next in importance, with or without tenderness at the apex or posterior border of the mastoid. If there be œdema of the superficial mastoid tissues or swelling in the neck below and behind the mastoid with the previous history and continued pain, etc., just mentioned, pus in the mastoid cells may be diagnosed with certainty, but the facial expression, neuralgia condition of the auditory canal, and one or two tender points on pressure are sufficiently characteristic without any definite swelling or œdema of the parts, to justify a diagnosis and warrant operative interference. If a good surface thermometer is obtainable it will often show a difference of from  $\frac{1}{2}$  to  $1^{\circ}$  F. higher on the diseased than on the healthy side. The surgeon must, however, take the temperature himself in order that he may know that the comparison is exact or reliable. The method is only of value in the absence of marked swelling or œdema of the parts.

It is very doubtful whether purulent mastoiditis, *i.e.*, pus in the antrum and cellular spaces of the mastoid, ever undergoes a spontaneous cure by absorption of the products of inflammation, and it is well known that neglected cases of this kind often terminate fatally. It is, therefore, the duty of the surgeon to recommend operation as soon as pos-

sible, if the diagnosis be justified or rendered probable by the presence of the signs and symptoms enumerated.

The operation is practically devoid of danger in itself, if performed by anyone moderately familiar with operative work and possessed with an accurate knowledge of the surgical anatomy of the mastoid region. The real danger lies in the direction of unnecessary delay.

#### NEW BOOKS, ETC., RECEIVED AND NOTED.

*J. B. Lippincott Company, Philadelphia.*

International Clinics: A Quarterly of Clinical Lectures and Specially Prepared Articles, etc. Edited by Henry W. Cattell, and Collaborators. Vols. I., II., and III. Eleventh series.

A Treatise on Surgery by American Authors. Edited by Roswell Park, A.M., M.D. Third edition, enlarged and thoroughly revised. 1901.

*Baillière, Tindall and Cox, London.*

On the Cure of the Morphia Habit without Suffering. By Oscar Jennings, M.D., M.R.C.S. Second edition, revised and enlarged. 1901.

Menstruation and its Disorders. By Albert E. Giles, M.D., B.Sc., F.R.C.S., M.R.C.P.

*W. B. Saunders & Co., Philadelphia and London.*

First Aid to the Injured and Sick. By F. J. Warwick, B.A., M.B., and A. C. Tunstall, F.R.C.S.E. 1901.

*Lea Brothers & Co., New York and Philadelphia.*

Anatomy, Descriptive and Surgical. By Henry Gray, F.R.S. Edited by T. Pickering Pick and Robert Howden. A revised American from the fifteenth English edition. 1901.

*W. B. Saunders & Co., Philadelphia and London.*

American Edition of Nothnagel's Encyclopædia. Typhoid and Typhus Fevers. By Dr. H. Curschmann, of Leipzig. Edited with additions by William Osler, M.D. 1901.

Saunders's Medical Hand-Atlases. Bacteriology. By Prof. Dr. K. B. Lehmann and R. O. Neumann. From the second enlarged and revised German edition. Edited by George H. Weaver, M.D. In two volumes. 1901.

An American Text-Book of Pathology. Edited by Ludwig Hektoen, M.D., and David Riesman, M.D. 1901.

A Laboratory Handbook of Urine Analysis and Physiological Chemistry. By Charles G. L. Wolf, B.A., M.D. 1901.

A Text-Book of Pharmacology. By Torald Sollman, M.D. 1901.

*D. Appleton and Company, New York.*

A Text-Book of Medicine. By Adolf Strümpell. Third American edition. Translated by permission from the thirteenth German edition by Herman F. Vickery, A.B., M.D., and Philip C. Knapp, A.M., M.D. With Editorial Notes by Frederick C. Shattuck, A.M., M.D. 1901.

*Government Printing Office, Washington.*

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Second Series, Vol. VI. G.—Hénette. 1901.

## Proceedings of the McGill Medical Society of Undergraduates.

### McGILL MEDICAL SOCIETY.

*Meeting, November 15, 1901.*

The fortnightly meeting was held in No. III. Lecture theatre, the President in the Chair.

The first paper presented was on "Neuritis" by J. Roddick Byers, '02. Many of the clinical features, such as the gait and deformities, were illustrated by pen and ink sketches. The pathological conditions were shown by large coloured drawings and these formed a very interesting feature of the paper.

The second paper by S. B. Thomas, '03, was entitled "Malaria from Marsh Poison to Mosquito Bite." It was illustrated by lantern slides showing the development of the parasite, and by a microscopic slide from a recent case in the Montreal General Hospital.

J. C. Fysche, '04, read a very interesting paper entitled "A Few Anthropological Notes."

*Meeting, November 29, 1901.*

This was the largest meeting in the history of the Society, over two hundred being in attendance, to hear the most interesting programme so far this year.

A paper "The Modern Bullet, Its Effects and Their Treatment," read by R. C. Cox, '02, proved most interesting, the observations of surgeons in the South African war being compared with those of the War of the Rebellion.

Dr. Shepherd then gave an interesting and instructive lantern demonstration on Skin Diseases, paying particular attention to small-pox, a subject which in view of its prevalence at present over the whole of this continent was most apropos. Among the slides shown were a number from photographs taken by Dr. Secord of the Montreal General Hospital House staff last summer. The exhibition was highly appreciated by everyone present.

D. W. McKechnie, '04, gave a paper on "Longevity" in which he dealt with the lease of life of the different species of the animal and vegetable kingdoms, mentioning especially the human race. He as-



sured his hearers that members of the medical profession belonged to the long-lived class.

"Diseases of Occupation" was treated in a very successful manner by W. A. Lincoln, '04, who deserves special mention for undertaking to read up such an advanced subject.

The members of the third and fourth years learned with much regret that Dr. E. W. Archibald had been obliged to resign from the Royal Victoria Hospital staff on account of ill health. He will be greatly missed at the Out-Patient clinic where his demonstrations were greatly appreciated. We trust he will soon be able to resume his practice.

Dr. C. B. Keenan, D.S.O., of the class '97, has been appointed to fill the position vacated by Dr. Archibald.

**The Charity Ball.**—Much pleasure is expressed by the students that this annual event in aid of one of the branches of the faculty of medicine is to be held in the Medical building. The medical students have never been able to give a ball on account of having had no halls available for the purpose; but now that this is no longer the case it is to be hoped that a Medical Dance will be added to the list of University entertainments.

**The Freshmen.**—A noticeable feature of this year's class of freshmen is the youthful appearance of many of the members, several having hardly passed the knickerbocker stage. The year includes three aged seventeen, eleven aged eighteen, and eleven aged nineteen years. From the fact that these young men, if they are successful in passing all their examinations, will graduate at the early age of twenty-one to twenty-three years, it would certainly have seemed wiser for them to have taken first a B.A. degree and thus have secured a good all round education. Many of the larger universities are now insisting that matriculants in medicine shall have such a degree or its equivalent.

A large band of students from the four years in medicine marched to Bonaventure Station on the evening of Dr. N. D. Gunn's departure for New York in order to wish him *bon voyage* and good luck in his approaching marriage. It was a very appreciative and demonstrative gathering, and the cause of its assembling was quite unaware of why so many of his students happened to be at the station until they expressed their approval in their usual manner.

**Compulsory Vaccination.**—In accordance with the request of the Provincial Board of Health calling for a general compulsory vaccination in this city, the Governors of the University arranged to have all students vaccinated. This has been accomplished by the members of the Faculty of Medicine assisted by the students of the fourth year.

## NEURITIS.

BY

J. R. BYERS, '02.

Neuritis or inflammation of nerves may occur in all gradations from a small localized lesion to many extensive ones. When involving several nerve trunks, and resulting from a general cause, we speak of it as multiple neuritis or polyneuritis.

*Etiology*.—In looking into the causes we find it is best to divide them according to the above grouping—taking then : 1st—Localized neuritis, one finds that two of the most frequent etiological factors are cold and exposure, and hence we often hear the term rheumatic neuritis.

Again, traumatism and pressure is often the history given. It is not infrequent to hear of a person, who has fallen asleep during a debauch, with his arm over the back of a chair, and awakened with a paralysis of the extremity. Pedlars are often the subjects of a neuritis of the brachial plexus caused by pressure from their straps over the shoulder, from which their load is slung.

Neuritis is often secondary to an extending inflammation of adjacent tissues, or may be secondary to some specific virus circulating in the system.

In thirty-three consecutive cases admitted to the Royal Victoria Hospital for treatment, seven were of traumatic or pressure origin.

Of these seven cases, six had the upper extremities affected, and one the lower.

Multiple neuritis, although divided off by most writers from localized neuritis, must appear as a very much exaggerated form of the simpler type, and this is strengthened by the fact that we may have all gradations of severity and extent of the symptoms and effects.

The usual classification of causes is as follows:—

1st—The poisons of the infectious diseases.

2nd—Organic poisons.

3rd—Some of the metals.

4th—Cachetic conditions and malignant disease.

5th—Endemic neuritis or "Beriberi."

6th—Overexertion and exposure to wet and cold.

Among the cases admitted to the Royal Victoria Hospital from January, 1895, to May, 1900, causes were recorded as follows:—

|                         |         |           |         |
|-------------------------|---------|-----------|---------|
| Alcohol.. . . .         | 8 cases | 4 females | 4 males |
| Diphtheria.. . . .      | 4 do.   | 1 do.     | 3 do.   |
| Lead.. . . .            | 2 do.   | .....     | 1 do.   |
| Copper.. . . .          | 1       | .....     | 1 do.   |
| Arsenic.. . . .         | 1 do.   | .....     | 1 do.   |
| Septic.. . . .          | 1 do.   | .....     | 1 do.   |
| Cold.. . . .            | 1 do.   | 1 female  |         |
| No definite cause.. . . | 8 do.   | 3 do.     | 5 do.   |

*Morbid Anatomy*.—It must be remembered that in an extending inflammatory process from other regions to a nerve trunk, that the ordinary events of inflammation will occur in the protecting coats of a nerve and for a time at least the lesion may be an epineuritis, when we find the fibrous sheath of the nerve, swollen and infiltrated, red in color and at this stage during life there is great pain due to the pressure upon the nervi nervorum.

The process may go deeper and next become a perineuritis, and in this way is the interstitial neuritis in which there is an accumulation of inflammatory exudate between the nerve bundles. As yet the nerve fibres may not appear to be involved, but the neurilemma has an increase in the number of its nuclei. Progressing further, we may note the following changes :—The myelin becomes fragmented ; 2.—nuclei of internodal cells swollen ; 3.—the axes cylinders present varicosities ; 4.—undergo granular degeneration, and 5.—ultimately the nerve fibres may be completely destroyed, sometimes containing much fat, the so-called lipomatosis neuritis of Leyden.

In other conditions the changes are more of a parenchymatous nature, resembling Wallerian degeneration following section from the cell proper. In this class the interstitial tissues are little affected unless secondarily. The principal changes noted are: 1st, the myelin becomes segmented, and divided into small globules and granules; 2nd, the axes cylinders become granular broken and divided, and ultimately disappear; 3rd, the nuclei of the sheath of Schwann proliferate, and 4th, finally the fibres are reduced to atrophic tubes without a trace of normal structure. Due to these changes the muscles necessarily show great atrophic changes too, and the nerve sheath seems to extend directly into the interstitial tissues of the muscle (neuritis fascians of Eichorst).

*Symptoms—Localized Neuritis*.—Pain, this is usually of a stabbing character, and occurs not only over the nerve trunk, but the parts supplied by the impaired nerve.

Sensitiveness or tenderness, over the nerve as before mentioned due to the affected nervi nervorum, and first suggested by Weir Mitchell.

Sometimes there is a redness, and oedematous swelling along the course of the nerve, in other words the outward sign of an acute inflammation.

Muscular action of the parts supplied, and tactile sensation are both diminished.

Herpes and effusion into joints sometimes occur, and a rise in temperature is not uncommon.

In more chronic cases, the pain which has been of a dull, harrowing, sickening degree, occurring in sharp paroxysms, may disappear or occur in the same lesion at different times.

And lastly, starting at the periphery of a nerve, the lesion may travel upwards, termed then an ascending or migratory neuritis, going possibly as far as the spinal cord and causing a myelitis.

*Alcoholic Multiple Neuritis*:—It is best to divide the symptoms of this division under headings of causes, and as Alcoholic neuritis, is by far the most important we will place it first—(being equally divided male and female).

Although the figures from our hospital do not agree with the following, it does, however, occur in women oftener than men, and no doubt later, when more cases have been reported, this will be proven here as it has been elsewhere.

As a rule it does not occur in the “blow out” kind of drinkers, but in the “wee nippy” ones who regularly indulge.

It is usually marked by a gradual onset starting at the periphery and may be preceded by neuralgic pains.

In several case reports I noticed that the first symptoms were epigastric pains, and persistent vomiting.

Paralysis begins as a rule in the feet and goes upwards, affecting the extensors more than the flexors, so that there is wrist and foot drop. In the eight cases reported, the following occurred:—

|                                           |          |
|-------------------------------------------|----------|
| Lower extremities alone affected. . . . . | 4 cases. |
| Upper and lower affected. . . . .         | 4 cases  |
| Pain, first symptom. . . . .              | 5 cases  |
| Paralysis, first symptom. . . . .         | 3 cases  |
| Foot drop alone. . . . .                  | 3 cases  |
| Foot and wrist drop . . . . .             | 2 cases  |
| No foot or wrist drop. . . . .            | 1 case   |
| Deep reflexes present. . . . .            | 4 cases  |
| Deep reflexes absent. . . . .             | 4 cases  |

Sensory symptoms are variable and we may get all gradations of pain.

Swelling of the hands and feet sometimes occurs. I remember one



case reported in which the left leg was greatly swollen. The gait is valuable in making a diagnosis, the extensor and peroneal muscles being paralyzed gives an equino-varus condition of the foot. As the patient raises the member, the toe drops so that he has to lift it high to clear the ground which he does by using his thigh, and thus presents a high knee action, the foot is then thrown forward "flail like" and comes down on its outer border. It has been termed by Charcot the "steppage-gait." Mental symptoms are frequent; there may be delirium and extravagant hallucinations.

*Acute Febrile.*—Acute febrile multiple neuritis may follow cold or over-exertion, or may occur spontaneously. It is usually ushered in with a chill, pain resembling acute rheumatism. There is a rapid rise in temperature going often as high as 104° F.

Sensitiveness of nerve trunks in the entire limb. Loss of muscular power, at first marked in lower limbs and extending with the features of an ascending paralysis (this is not constant). The muscles soften and waste so much that "flabby paralysis" is present, and to such an extent sometimes, that respiration may be carried on by the diaphragm only. The course is variable. It may end in ten days by paralysis of the heart, or extend for six weeks, followed by a slow recovery.

The paralysis of some muscles may last for some time.

*Recurring.*—Recurring multiple neuritis, by which we mean a recurrence with much the same symptoms as before described. They may occur several times.

*Infectious.*—Multiple neuritis in the infectious diseases.

These are particularly common following diphtheria, the lesion being of a peripheral nature. As a rule the soft palate and pillars of the fauces are the first muscles to show paralysis. There may as yet be no pain, and regurgitation of food through the nose may be the first thing to draw the patient's notice to it. Four cases of diphtheritic paralysis have been recorded at the Royal Victoria Hospital since '95.

In these four cases the following points were prominent:—

|                 |   |         |        |         |
|-----------------|---|---------|--------|---------|
| Males.. . . .   | 3 | 3 yrs.  | 7 yrs. | 22 yrs. |
| Females.. . . . | 1 | 25 yrs. |        |         |

Paralysis was the first symptom in all four, and in three cases the pharynx, extremities and accommodation of sight.

*Arsenical Neuritis:*—This lesion has been the means of turning the poor classes of England's population, if not into abstainers from beer, at least into sceptics of its nutritious powers. The cases are usually accidental. Many cases used to give history of having been in contact with cheap green wall paper.

In case No. 1087, R. V. H., the patient, was a man of fifty-five years, who had been exposed to "Paris green dust." His first symp-

tom seems to have been a pustular eruption, followed by slow sensory disturbances and later paralysis of the lower limbs and pain in the sacro-iliac region.

It resembles alcoholic neuritis, in that foot drop is present, and the characteristic steppage gait.

*Endemic:*—Endemic neuritis or beri-beri is most common in India, China, Japan and the Strait Settlements. It is probably due to a micro-organism, and seems to have some connection with fish diet. An outbreak of the disease occurred among Cape Cod fishermen some years ago.

The acute pernicious form has three prominent symptoms, namely, fever, anæmia and general anasæra. In other cases, numbness, loss of reflexes, areas of anæsthesia and muscular atrophy are present.

The mortality is variable, running from three to fifty per cent.

*Lead:*—Lead palsy is rarely a primary manifestation of the poison, but usually occurs afterwards without fever. The most frequent form is the anti-brachial type, in which the musculo spiral nerve is involved, causing paralysis of the extensor muscles of forearm and fingers, and hence the characteristic wrist drop. Another form is the brachial type which is manifested by atrophy of the scapulo humeral muscles. It is usually bilateral, and sometimes follows the anti-brachial form. Again, there is a type called the Aran-Duchenne, marked by wasting of the thenar and hypo-thenar eminences of the hand, and may suggest to the practitioner poliomyelitis anterior chronica. It is most common amongst tailors.

In other cases the extensors of the lower limbs are affected, and the "steppage gait" is produced. This class is termed the peroneal form.

In the Laryngeal form adductor spasm has been noted as the chief symptom.

Besides the foregoing differentiated palsies, there may be generalized paralysis, which may be slow and progressive, beginning with the characteristic wrist drop. More often it is rapid, producing complete paralysis of the part in a few days. Optic and neuro-retinitis may develop.

In two cases of children at the Royal Victoria Hospital, all the extremities were involved, foot and wrist drop being present. One of the cases took on recurrent character, there would be an improvement for about two months, and then a relapse with a return of symptoms.

*Diagnosis of Neuritis:*—Owing to the injury or irritation of the nerves, electrical tests in multiple neuritis may show marked departures from the normal in different cases, and frequently in the same case at different times. Early in the days of the disease electric excitability to faradic and galvanic currents, may be increased. As a rule this lasts but a short time and is usually followed by diminished fara-

dic response. As faradic excitability lessens the voltaic current augments in power, and gradually presents some or all of the items of the reaction of degeneration. The history of the case is very valuable in making a diagnosis. The alcoholic cases are usually distinguished by wrist drop, foot drop, steppage gait and congestion of the hands and feet. Lead palsy can be based upon a history of lead colic, and the blue line in the gums.

The gait, which is often termed pseudo-ataxic, and absence of motor power, girdle pains, Argyle-Robertson phenomena, and gastric and intestinal crises distinguish neuritis from locomotor ataxia.

In poliomyelitis, the onset is usually sudden and the entire limbs involved at once, no mental symptoms and the lesion is not usually symmetrical.

In myelitis:—The deep reflexes are usually exaggerated, bed-sores common and sphincters are usually beyond control of patient, while in neuritis bedsores are very rare and sphincter control seldom interfered with.

It is the rule for deep reflexes to be diminished or abolished in neuritis. Occasionally, and only at first, they may be exaggerated, but ankle clonus is never encountered.

*The Prognosis* depends upon the degree and character of the lesion and should in most cases be guarded.

*Treatment*:—In all cases *rest* is absolutely necessary, and the best way of obtaining it is to put the patient in bed. Pain may be allayed by morphia and hot applications of lead and opium are valuable. In the alcoholic form stimulants should be gradually withdrawn. As in rheumatism the salicylates have a beneficial effect in the rheumatic variety.

Potassium iodide is extremely useful in multiple neuritis arising from the poisons and in the diphtheritic type starting with small doses. Strychnine can usually be administered in maximum doses with good results. Bedsores though not common should at all times be guarded against. Very gentle friction may be employed from the onset, and as the pain passes away, massage and the use of interrupted current are beneficial.

Contractions may be overcome by passive movements. The weight of the bedclothes should be removed by the use of cages so as not to press the toes down.

Vessication and irritating applications must be avoided as they are liable to cause indolent ulcers.

The question of anodynes is one requiring mature judgment, the coal-tar derivatives act well and are not so objectionable as opiates and

cocaine ; chloral and the bromides combined are the surest sleep producers.

In cases of long standing where contractures are strongly developed, recourse to stretching under anæsthetics and fixative dressings should be used. This failing, tenotomy is in order.

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### HYPNOTISM.

BY

N. W. STRONG, '03.

Hypnotism must not be regarded as an outgrowth of modern civilization. It has been in use for thousands of years in the East. Take for example the custom of the Egyptians of looking into vessels and crystals for divinations. They, like the fakirs of India, threw themselves into the hypnotic state by fixation of gaze. The practices of the magicians, the laying on of hands, the expulsion of evil spirits, and the belief in witchcraft, may be regarded as the forerunners of Modern Hypnotism.

During the Middle Ages, the influence of the heavenly bodies upon mankind was believed in, and from this a belief gradually developed that human beings also influenced one another and that man could magnetically heal the sick. Mesmer was the first to draw universal attention to animal magnetism. He constructed a somewhat complicated apparatus filled with a liquid which he termed "electrical fluid," and connected by a series of wires to handles which were to be held by the subjects. By grasping these handles thousands professed to be cured. It was afterwards discovered that there was no electricity in connection with the apparatus. Since the time of Mesmer, researches have been made more or less continuously in most of the countries of Europe, in Great Britain and to some extent in America.

About the year 1820, Dr. Braid of Manchester, became interested in the subject. He induced sleep by fixation of gaze and called the phenomenon hypnotism, a name which it still bears.

He employed hypnosis as a therapeutic agent especially as an anæsthetic in surgery. Some forty years later, Liébeault, a country practitioner, who later moved to Nancy, took up the investigation and became the real founder of suggestive therapeutics.

In 1878, the late Prof. Charcot began his public classes, while a little later, Bernheim, a pupil of Liébeault, opened up a second school in France,—the school of Nancy.

Then followed the contest between the school of Charcot, better known as the school of Paris or the Salpêtrière, and the school of Nancy. Suggestion is the chief cause of contention.



The Nancy school claims that hypnosis is a purely psychic process, due to mental action only, and that therefore, the phenomenon can best be produced in persons of good mental action.

The Paris school, on the other hand, believes that the true hypnotic state can be produced only in those whose nervous system is in an abnormal or diseased condition. They also affirm that suggestion is not necessary to produce many of the phenomena observed. At a conference held in Paris in 1899, the views of the Nancy school were given supremacy in general.

Hypnotism has been making substantial progress within the last few years. Much has been written on the subject, but the best works are in German and French. Considerable investigation is being carried on in the United States, but at the same time, it is made the instrument of quacks and charlatans which retards and discredits its scientific study.

Hypnotism may be defined as a nervous condition resembling ordinary sleep, in which the subject is in rapport with another person known as the hypnotist or operator.

Is hypnosis then the same as ordinary sleep ?

So little is known of the actual condition during natural sleep that we have little means of comparison except from external appearances. In natural sleep the brain becomes pale and partially bloodless, the will is abolished and consciousness fades away as blood is pressed out by the arterioles. During hypnotization, ideas arising in the mind of the subject are sufficient to cause such changes in the blood supply as will produce sleep. In natural sleep, then, the brain is comparatively bloodless, while in dreams there is a partial return of the blood to the vessels. The state of consciousness in the dreamer is one in which the higher functions are dormant.

From dreams we may pass on to common somnambulism, which may include, not merely sleep walking, but the simpler stages such as talking in sleep. Many astounding feats have been performed during somnambulism. It differs from hypnosis in that the actions are self suggested and can be accounted for by the laws of association, while in hypnosis the subject is under the control of another and is governed by his suggestions.

There is then a close resemblance between sleep and hypnosis. In the latter state, the subject, if left to his own devices, sleeps quietly ; this resembles natural sleep. If he receives a suggestion from the operator he passes into the condition of activity, but his higher faculties are still dormant. This is very similar to the dreaming and somnambulistic state. There is this difference ; in hypnosis there is greater torpidity than in sleep and greater activity than in dreaming and

somnambulism. This torpidity of the higher faculties combined with the abnormal activity of the lower, is one of the most interesting phenomena of the hypnotic state.

Many methods are employed to produce hypnosis, all of which are more or less efficient. They may be classed as physical and psychical, but there is probably no method purely physical. The followers of Mesmer believed in the passage of a magnetic fluid from the operator to the subject. This theory is disregarded at present as it has been shown that neither magnets, electricity nor electrical variation are essential to the process. Then there is the theory that the will of the operator is the potent factor.

Dr. Elliotson, as early as 1820, proved that the will of the operator played no part; Dr. Hart, former surgeon to the West London Hospital, came to the same conclusion after a series of experiments. So long as the subject believes that the will of the hypnotist is that he should sleep, sleep follows. Absolute indifference on the part of the operator, will not affect the result so long as the usual methods are employed. The condition of hypnosis is then always subjective. It is independent of the operator's will; passes and gestures are unnecessary. Stripped of all mysticism the existing methods are all different forms of the same, namely, suggestion, and in no way can ideas be better conveyed to the subject than by the sense of hearing.

*The use of hypnotism as a therapeutic agent.*—The opinion of those who have given suggestive therapeutics a fair trial is, on the whole, very favorable. Hypnotic treatment is employed quite extensively in Europe, and to a less extent in the United States.

Perhaps the most cogent reason why suggestive therapeutics have been overlooked to such an extent by the medical fraternity is the unfriendly attitude of the laity. Some are sceptical and doubt that such a state can be induced, while others believe that only a very few possess the power of hypnotizing, and these they are inclined to regard as very suspicious characters, possessing supernatural power of a questionable source. Before hypno-suggestion can be beneficially employed, the public must be disabused of the prejudices against it. This will duly be accomplished when the medical profession as a whole, take up the subject, wrest it from the hands of the quacks and showmen, and present it to the world in its true form untarnished by the exhibitions of those whose highest aim is money attained by hood-winking a superstitious public.

Many physicians, on the other hand, do not approve of suggestive therapeutics, mainly, I have no doubt, through lack of knowledge. It seems to me that only those who have given this form of treatment a

fair trial are entitled to express an opinion, or to condemn the use of hypnosis.

Dr. Wetterstrand of Stockholm, in his works on Hypnotism, gives the history of 128 patients. Amongst the diseases treated, were insomnia, habitual headache, neuralgia, chorea, paralysis, stuttering, neurasthenia, hysteria, alcoholism, morphinism, and other drug habits. As a result of suggestion during hypnosis, there was improvement in almost all cases, while in the majority a permanent cure was established. Bernheim of Nancy, and Peterson of Boston, report like successes.

The particular kind of diseases adapted to treatment by psychotherapeutics may be classed under one heading,—functional nervous diseases. These represent a large number of the ailments met with in general practice; they are usually difficult to cure with drugs, hence it follows that if suggestive therapeutics can be advantageously applied, there is here a wide field of usefulness.

With regard to the dangers and disadvantages of hypno-suggestion, I will quote one or two opinions on the subject. Dr. Eskridge of Denver says,—“He who resorts to hypnotism is dealing with a potent agent and he should use it as carefully as he would a deadly poison.”

“Hypnotism,” writes W. J. Morton in the *N. Y. Medical Journal* of 1897, “is a pernicious practice in that it lessens one’s power of resistance and so degrades the patient both morally and intellectually.” So far as I have been able to ascertain, the exact opposite of the latter view is held by the leading hypnotists of Europe. Compare for example, the statement of Wetterstrand when he says, “I have induced hypnosis about sixty times and I have never seen or heard that anybody suffered any bad effects afterwards.” Such testimony as that is most convincing.

Charcot and his disciples employed a partially physical method, to which it seems probable, many of the bad effects attributed to hypnotism, may be traced. Prolonged staring at bright objects, the use of a loud sounding gong, and of a powerful electric spark, are some of the means which he employed. Any hurtful impression that may be left in the mind of the patient is generally due to the ignorance or inexperience of the operator.

There is a tendency on the part of some to overestimate the value of suggestive therapeutics. “It seems to me,” says Eskridge, “that much injustice has been done hypnotism as a therapeutic agent by the extravagant claims made for it by some physicians, whether it has or should have a place in therapeutics, we must decide after giving it a fair trial. So many of the results alleged to have been obtained by hypnotism, seem so exaggerated that one is led either to doubt the honesty of the physician or to suspect that his judgment has been



warped by enthusiasm." Nevertheless the fact that hypnotism is sanctioned by such men as Forel, Moll, Kraft-Ebing, Berillon Delbœuf, Lloyd-Tuckey, Janet, Tokarski and Dumont-Pallier is a most convincing proof of its efficacy.

The question whether such cures are permanent is important. According to Liébeault and Bernheim, who have both had a very wide experience, the cures are in many cases real and lasting. Forel claims that the benefits are of permanent duration, while Van Reuterghem and Van Eaden of Amsterdam compare the results with those of a surgical operation.

Opinions differ as to the efficiency of hypnotism as an anæsthetic. A moderate opinion is that it can and should be used where other anæsthetics are contra-indicated, for example in cardiac and pulmonary disease. Many cases are on record where it has been successfully employed.

In the treatment of the insane, Voison of the Salpêtrière claims success. The insane and inebriate are difficult to influence. In cases of simple melancholia and the milder forms of insanity hypnotic treatment seems to be indicated. Apart from the power of suggestion the production of sleep would, in many cases, be invaluable.

It seems to be a common belief that only certain persons can hypnotize. Of course this is not so. Any one can succeed if they take the trouble to learn. In order to have any marked degree of success tact is essential, the educated must not be approached in the same manner as the ignorant, the former will require more instruction, as they will resent any process which they do not comprehend, they require to know the nature of the operation. Over-anxiety to sleep is fatal to success. The sceptic and the critic are hard to influence. The favorable subject is the trustful, confiding, truthful one as opposed to the restless, nervous, and egotistical.

Authorities differ as to the percentage of hypnotizable patients. Dr. Patrick of Chicago, gives from ten to twenty per cent, as a fair average.

Bernheim has succeeded with ninety per cent. of his patients, Wetterstrand with about eighty per cent. The ratio will vary with locality, race and age. Success often follows after numerous previous failures. Wetterstrand succeeded in hypnotizing a woman after seventy vain attempts.

The results obtained do not seem to be so much the result of imagination as of volition. It is the will that is strengthened. Eskridge says of this, "the value of hypnotism in each individual case depends upon whether the mental impression made by the hypnotist upon the subject in the state of hypnosis is capable of removing and taking



the place of another mental impression of which the subject is possessed.

Thus it is not so much suggestibility that is necessary, but the power of applying the suggestion on the part of the patient, or as Peterson puts it, "what one looks for is a slight receptivity for outside impulses and as great a centralization of psychic functions and the ideoplastic capacity as possible." Where such a combination exists many patients can be benefitted while in the first stages of hypnosis or even in the waking state.

Apart from its therapeutic value, hypnotism is of much psychological interest on account of the mental and psychical phenomena which it presents, such as hyperæsthesia, of the senses and post hypnotic suggestion, but time will not permit of discussing them here.

I have endeavored to show you that hypnotism is not a "cure-all," that in the words of Dr. Patrick, "hypnotism constitutes no 'short-cut' to therapeutic success, in medicine as in other walks of life, there is no royal road to fortune," and he who would use this diagnostic and therapeutic aid must be the careful, sensible, wise physician still."

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